NOVEMBER, 1962 • 35¢

AMERICAN Cinematographer

Magazine Of Motion Picture Photography And Production Techniques

Special In This Issue

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WHAT'S NEW IN EQUIPMENT, ACCESSORIES, SERVICES • INDUSTRY NEWS



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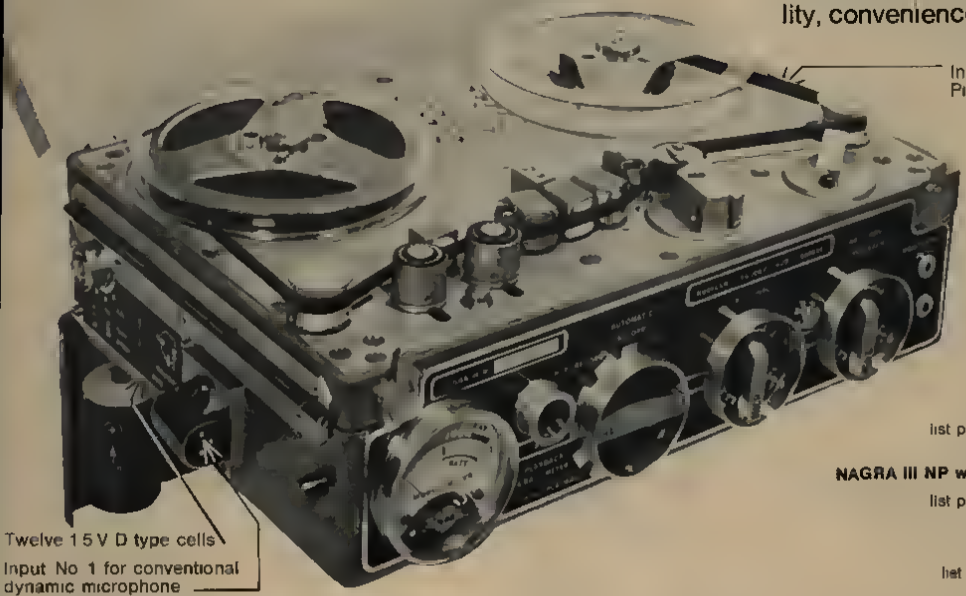
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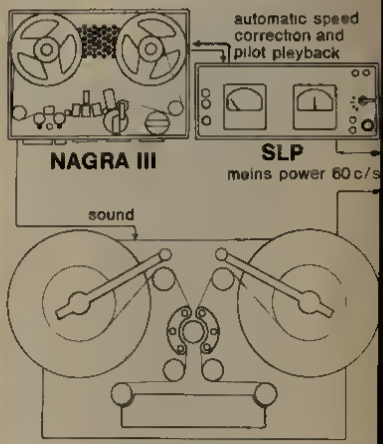
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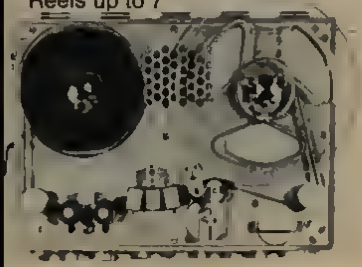
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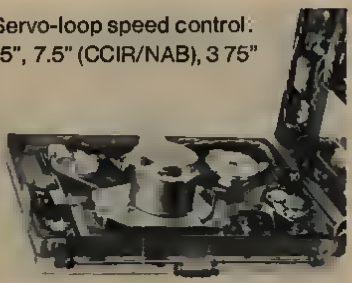
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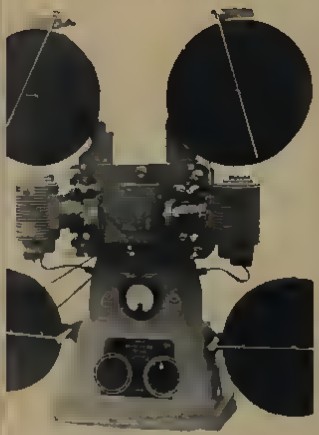


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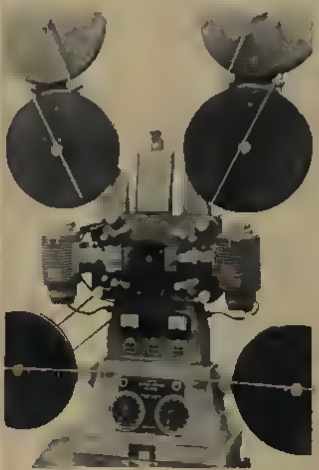
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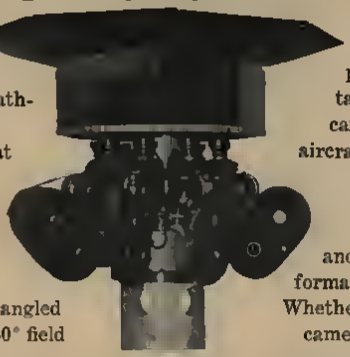
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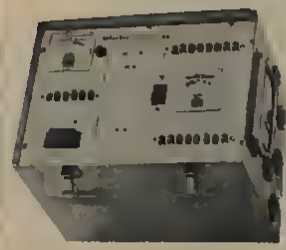
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INDUSTRY NEWS

News briefs of industry activities, products and progress

ASC Symposium on Traveling Mattes

New methods that would provide shortcuts in the production of traveling matte shots and possibly enable studio photographic effects departments to produce composite color prints in two or three days instead of from eight to ten, were among several proposals outlined in a special symposium on traveling matte processes conducted recently by the American Society of Cinematographers.

Walter Beyer, of Universal-International and Chairman of the ASC's Research and Educational Committee proposed that film manufacturers undertake research to determine the feasibility of producing a special multilayer color film that conceivably would provide the technical breakthrough necessary to achieving both economy and improved quality in the production of traveling mattes.

The undertaking of such a project, it was pointed out, should not be considered absurd in the light of the small amount of film used in shooting mattes as compared to that consumed in regular production. Actually, it was emphasized, the amount of film used in producing traveling mattes is much greater than generally believed. It was the opinion of some of those present that the industry would gladly pay a premium for a special traveling matte negative that would make possible completion of an acceptable composite daily in no more than two days after shooting.

It would appear highly desirable at this time, Beyer said, to perfect a single film traveling matte system, not only for standard 35mm production, but particularly applicable to new wide-screen systems utilizing 65mm and 70mm film.

Fifteen top-ranking photographic and traveling matte engineers from Hollywood studios and laboratories and film manufacturer representatives attended the symposium, which was conducted jointly by Beyer and Hal Mohr, Co-chairman of the ASC's Research and Educational Committee.

The ASC's Research and Educational Committee, activated by Bill Daniels, the Society's president eighteen months ago, to date has researched and offered for the industry's consideration a total of ten technical recommendations having to do with improvement of the industry's film production techniques.

•

General Film Issues Producer Service Bulletins

Recommended methods of preparing motion picture film for processing at the laboratory are illustrated in a set of four editing charts just published as producer service bulletins by General Film Laboratories, 1546 N. Argyle Avenue, Hollywood 28, California.

The following subjects are included: "Methods of Marking Workprints to Indicate Effects" "Preparation of Eastman Color Negatives for 35mm and 16mm A & B Roll Printing," "Preparation of 16mm Original Reversal A & B Rolls." and "Preparation of 16mm Printing Leaders."

A series of seven Film Printing Charts also available shows graphically the methods for printing 16mm color negative, 35/32mm method for producing 16mm positive prints from B&W films; ditto for color films; printing 35mm B&W negative; printing color negative; printing 16mm B&W negative, release print production from 16mm B&W reversal originals, and release print production from 16mm color reversal originals.

A limited number of the bulletins are available free to qualified producers of motion pictures.

•

Saul Jeffe Heads Assn. of Cinema Labs

Saul Jeffee, president of Movielab, Inc., of New York, N. Y., last month was elected president of the Association of Cinema Laboratories. Active in the motion picture film industry for more than 30 years, Jeffee was elected during the fall meeting of the Association at the Drake Hotel in Chicago. He succeeds Byron Roudabush, Byron Motion Pictures, Washington, D.C.

W. E. Gephart, Jr., president of General Film Laboratories, Hollywood, Calif., is the new ACL vice president succeeding G. Carleton Hunt of the same firm. Two other officers of the organization were reelected. They are Louis Feldman, Du Art Film Laboratories, New York, N. Y., treasurer,

Continued on Page 646

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INDUSTRY NEWS

Continued from Page 644

and Dudley Spruill, Byron Motion Pictures, Washington, D. C., secretary.

Founded in 1955, the association represents film laboratories throughout the United States and Canada engaged in processing and printing film for motion pictures and television.

•

SMPTE Convention

The 92nd Semiannual Convention of the Society of Motion Picture and Television Engineers, held at the Drake Hotel in Chicago and concluded October 26th, saw Reid H. Ray elected President of the Society, Glenn E. Matthews honored with a commemorative scroll for his services to the SMPTE, and Dr. Frank G. Back, developer of the zoom lens, presented with the Society's Progress Award. Dr. Back is President of Zoomar, Inc., and is generally recognized as the "father" of the widely used zoom lens.

Glenn E. Matthews is Technical Editor for the Research Laboratories of Eastman Kodak Company. Reid H. Ray is President of Reid H. Ray Film Industries in St. Paul, Minnesota.

•

Unique Cinema Technique

"Embrace of Fate," Thailand's entry in this year's San Francisco International Film Festival, is an important film primarily because of its unique method of presentation. The "stars" of the presentation method will be on hand to demonstrate it when the film is shown on November 8 and 9.

The unique aspect of the Thai cinema, produced in 16mm, is that it is silent, but accompanied by live actors who sit in the theater and, following the movie visually, provide all the necessary voices, sound effects and music. So talented and versatile are the narrators, that they can easily produce all the necessary dialogue and sounds the first time they see the movie.

The voices are those of Rujira and Marasri Israngura, the most famous team of movie narrators in Thailand. For the screening, a special booth will be constructed in the theater where the narrators will perform in full view of the audience.

Known as the "Narrator of Seven Voices," Rujira Israngura impersonates both men and women, young and old. He and his wife have "spoken" more than 300 American, French, Italian and English films, as well as 350 Chinese and Japanese pictures in the 10 years they have been narrating.

The Film Festival presentation will mark the first time that the Thai method of showing motion pictures has been seen outside that country. Film Festival Director Irving Levin was so struck by the procedure when he visited Thailand last summer that he determined it was worthy of international recognition.

Deutsche Filmwochenschau, a West German newsreel company, is sending a director and cameraman to cover the San Francisco International Film Festival, which takes place in San Francisco, Calif., October 31 through November 13.

•

McCall Resigns Mitchell Camera Vice-Presidency

John D. McCall, last month, resigned as executive vice-president of Mitchell Camera Corporation due to ill health. B. G. Tubbs, vice-president of the corporation, has been named general manager. McCall will continue to actively serve the firm as consultant and member of the Executive Operating Committee.

Charles Austin, who has been associated with the Mitchell corporation for the past twelve years, has been appointed Marketing Manager of the company. Austin, for past two years, has been President of cinematographers' local 644, IATSE, and is an active member of the SMPTE, SPIE, Academy of Motion Picture Arts and Sciences, Academy of TV Arts and Sciences, and the British Kinematograph Society.

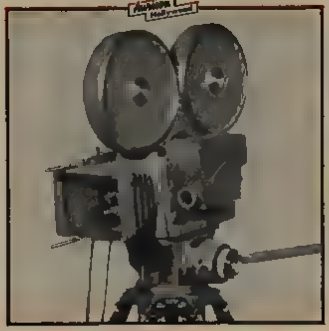
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News Briefs—Richard "Dick" Halpert, formerly with Arriflex, has joined the sales department of *Birns & Sawyer Cine Equipment*, Hollywood. . . . *John J. Glavin* has been appointed to sales staff of Consolidated Film Industries, Hollywood where he will service in plant, industrial, and space film producers. . . . *Behrend Cine Corp.*, Chicago, has opened a new equipment rental office in Detroit at 9930 Greenfield Road. William Smith is manager. . . . *Sidney P. Solow*, VP and General Manager of Consolidated Film Industries, has commenced his 16th year as an instructor in the Cinema Department of University of Southern California. . . . *Lee Davis*, formerly General Manager of Calvin Productions, Inc., Kansas City, Mo., has been appointed Vice-President of the company and will head its newly-created Marketing Division. . . . *S.O.S. Photo-Cine-Optics, Inc.*, New York, has purchased entire equipment inventory of Paramount News, Paramount Pictures' defunct newsreel subsidiary. . . . *Mitch Rose*, senior writer-director of Aerojet-General Corporation's motion picture unit in Sacramento, Calif., has been named Executive V-President of Industry Film Producers Association. ■

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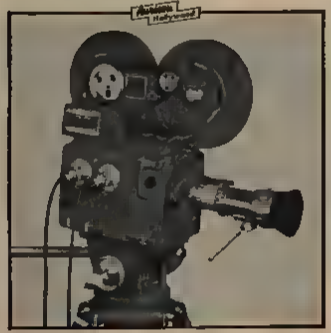
"CINE VOICE II" 16mm Optical Sound-On-Film Camera
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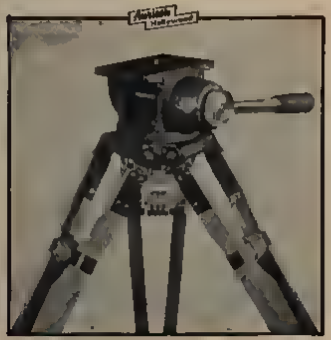
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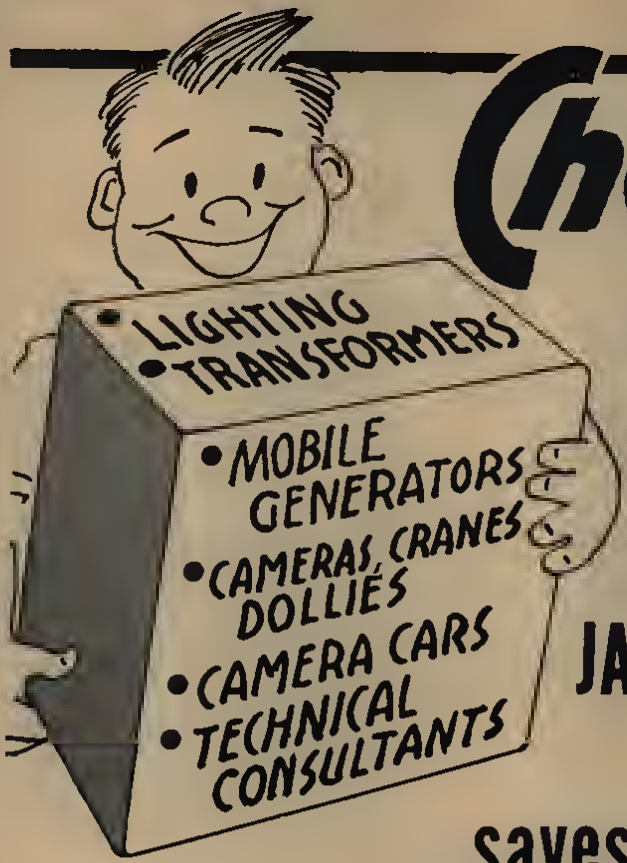
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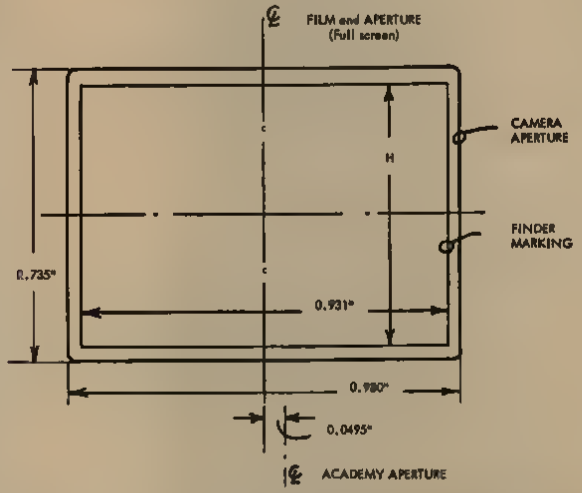
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A.S.C. RECOMMENDATION NO. 10

Society's Research & Educational Committee proposes standardization of camera finder and projector apertures for rush-print viewing of full-screen photography.

By WALTER REYER



FULL SCREEN APERTURE		ACADEMY APERTURE
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H for 1.37 0.677"	The optical reduction ratio	0.600"
H for 1.66 0.561"	between FULL SCREEN	0.497"
H for 1.75 0.532"	ACADEMY APERTURE	0.472"
H for 1.85 0.504"	AREA is 1.129 to 1	0.446"

Full screen width for all aspect ratios is 0.931", equivalent to the 0.825" dimension for the Academy Aperture

It is recognized that a noticeable gain in definition is obtainable by shooting full screen and reduction-printing down to Academy aperture for release in dye transfer printing. Since with Technicolor's dye transfer process the matrix is made in a step-printer, it is advantageous to introduce an optical reduction step at this stage. The following specifications for this type photography is by courtesy of Technicolor Corp.

SPECIFICATIONS FOR FULL SCREEN TO ACADEMY APERTURE REDUCTION A.S.C. RECOMMENDATION No. 10

1. SCOPE

1.1 This recommendation specifies data for marking camera finders and cutting projector apertures for rush-print viewing for "full screen" photography.

2. DIMENSIONS

2.1 The full-screen camera aperture shall be 0.980" by 0.735" in accord with ASC Recommendation #9, May 31, 1962.

2.2 The optical reduction ratio for this image area shall be 1.129 to 1.

2.3 Finder markings of the full-screen camera to correspond with established composition aspect ratios shall be as per diagram and table above.

2.4 The lens of the full-screen camera shall be on centerline of film and aperture and the printer shall compensate the offset position of 0.0495" during the printing stage onto the matrix for the academy aperture size.

3. USAGE

3.1 The full-screen-to-Academy-aperture reduction system is used in conjunction with the Technicolor dye transfer print process to increase definition for a higher quality wide-screen release from a matrix.

3.2 If prints from the same negative have to be made for ordinary photographic contact printing it would be necessary to prepare an internegative on a step printer with a 1.129:1 reduction ratio.

NOTE: Even though the finder markings on a full-screen camera show greater dimensions, *no change in set construction height is required.* This is strictly an aspect ratio consideration and for the same focal length lens the full-screen camera merely shoots at closer distance. ■





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WHAT'S NEW

IN EQUIPMENT, ACCESSORIES, SERVICES



Nagra III Tape Recorder

The Nagra III is a self-contained professional quarter-inch tape recorder ideally suited to any professional film production work. Product of Kudelski, Paudex-Lausanne, Switzerland, the Nagra III uses a low-speed electrodynamic motor instead of conventional high-speed motor controlled by centrifugal governor. Speed is stabilized by a servo amplifier controlled by a device that measures capstan speed directly.

Recorder features three heads: for erase, record and playback; also three tape speeds: 15", 7.5" and 3.75" per second. Operation is said to be so quiet it can be used with lid shut close to microphone.

Short sequences can be recorded in sync with camera without need for syncing device. For longer takes, a pilot sync pulse head can be supplied. List price is $1,045, and $1,095 equipped with sync pulse head. For brochure write company at 6, ch. de l'Etang, Paudex-Lausanne, Switzerland.



Mitchell-16 Focus Control

A remote selsyn follow-focus control, similar to that for the Mitchell 35mm BNC, is now available as an accessory for the 16mm Mitchell camera blimp. Device facilitates working in extremely confining areas or on dollies and cranes not equipped to carry a camera assistant. By means of 25-ft. lengths of cable, remote focus control can be achieved at distances up to 100 feet. Older type 16mm Mitchell blimps can be modified to accept the control according to Mitchell Camera Corp., 666 W. Harvard St., Glendale, Calif.



Samenco Intervalometers

A new line of Samenco Model MC 6 intervalometers for time-lapse cinematography features low cost, light weight, dependability, and a wide range of time intervals. Intervals from 2 seconds to 4½ hours are available in one unit, and changes are accomplished readily without tools. Some models feature floodlight as well as camera control. Necessary solenoids and mountings are available for all popular motion picture cameras. Sample Engineering Co., 17 No. Jefferson, Danville, Ill.

Dual-beam Photolamp

A dual-beam incandescent photo lamp incorporating both flood and spot beams is announced by Sylvania Electric Products, Inc., New York, N. Y. The 650-watt PAR 36 sealed beam lamp operates on household current and has an average rated life of 8 hours. It provides 45,000 centerbeam candlepower with a spread of 20° vertical and 29° horizontal. As a floodlight the lamp provides 27,000 centerbeam candlepower with a spread

Continued on Page 655



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Hofangerstraße 78, 8 München, 8
Cables: Molereng-München
General Manageress: Gisell Schneeberger

SPAIN — Alcalé 32, Madrid, 14
Cables: Molereng-Madrid
General Manager: Gregorio Sacristan

ENGLAND — Chase Road, London, N.W. 10
Cables: Molereng-London
Managing Director:

WHAT'S NEW

Continued from Page 652

of 33° vertical and 37° horizontal Cofor temperature is approximately 3400°K



Fofo-Mefar

The Model HSZ 5 Foto-Meter, designed for use with high-speed motion picture cameras. mey also be used for precision exposure rocasurements for all color and B&W films Light readings may be taken from camera position of smaff or "spot" areas of a scene. or of the brightest and darkest areas. Meter is calibrated froro 12 to 100,000 foot famberts; to camera speeds up to 20,000 fps; and for fens stops ranging from f/1 to f/32 Full-area view is approxiroately 20°. Two tiny mercury batteries provide necessary power. Overall size is 6″ x 3″ x 2″, construction is of aluminum List price is $187.00 with carrying case Fotomatic Corporation, 3141 West 10th St, Indianapolis 22, Ind



Automatic Threading Projector

Addition of automatic threading to 16mm sound projection is achievement of Bell & Howell Co., Chicago, fll, which recently introduced its new Specialist Autoload Filmosound Projector is jam proof and provides for automatic restoretion of lost film loop. Features include Bell & Howell's exclusive Proximity larop with built-in reflector and Super Proval 2-inch f/1.4 fens All controls are incorporated in illuminated vertical panel ■



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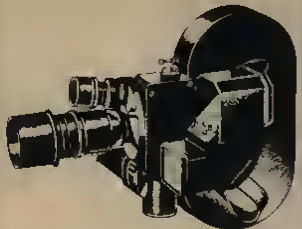
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BEHIND THE CAMERAS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

BY MARION GOLDIN

NOTE: Asterisks following titles indicate television film productions.

AMERICAN INTERNATIONAL

FLOYD CROSBY, ASC, "The Raven" (J. H Nicholson-Samuel Z. Arkoff Prod., PVision & Color) with Vincent Price and Peter Lorre Roger Corman, producer director

BILTMORE STUDIOS — N.Y.

JACK PRIESTLY, "Naked City"* (Screen Gems)

BIOGRAPH STUDIOS — New York

GEORGE STOETZEL, ASC, "Car 54 Where Are You?"*.

CASCADE STUDIOS

HENRY FREULICH, ASC, Commercials*.

ROY SEAWRIGHT, Commercials*

CBS—N.Y.

CHARLES MACK, LEO ROSSI, JOHN CLEMENTS, "CBS Reports"*

COLUMBIA STUDIOS

KIT CARSON, "Farmers Daughters"* (Pilot)

ROBERT BRONNER, ASC, Commercials*.

WILLIAM SKALL, ASC, Commercials*

GORDON AVIL, ASC, Commercials*

MICHAEL KELBER, "In the French Style" (Casanna Prod., shooting in Paris) with Jean Seberg, Robert Parrish, director.

ROBERT WYCOFF, "Dennis the Menace"*.

PHILIP LATHROP, ASC, "Postmark"* "Jim Fletcher"*.

ROBERT KRASKER, "The Running Man" (Peet Prods Ltd.; PVision & Color; shooting in Spain) with Laurence Harvey and Lee Remick, Carol Reed, producer-director.

CHRISTOPHER CHALLIS, "The Victors" (High road Prod; PVision; shooting in England) with Vincent Edwards and Christine Kaufmann Carl Foreman, producer-director

IRVING LIPPMAN, "Route 66"*.

CHARLES WELBORN, "Empire"*.

RICHARD RAWLINGS, "Higgins"*.

FRED GATELY, ASC, "Hazel"*, Commercial*.

GERT ANDERSEN, ASC, "Donna Reed Show"*.

DESILU—Culver City

LOTHROP WORTH, ASC, "The Real McCoy's"*

CHARLES STRAUMER, "The Untouchables"*.

DESILU—Cahuenga Studio

ROBERT deGRASSE, ASC, "The Danny Thomas Show"*; "Dick VanDyke Show"*.

MAURY GERTSMAN, ASC, "Tm Dickens—He's Fenster"*.

HENRY CRONJAGER, "The Joey Bishop Show"*.

SID HICKOX, ASC, "The Andy Griffith Show"*.

DESILU—Gower

GLEN MacWILLIAMS, ASC, "Fair Exchange"*.

MAURY GERTSMAN, ASC, "The Lucy Show"*,

TED VOIGHTLANDER, "Ben Casey"*.

EDWARD FITZGERALD, ASC, "Lassie"*.

ROBERT PLANCK, ASC, "My Three Sons"*

WALT DISNEY PRODUCTIONS

EDWARD COLMAN, ASC, "Savage Sam" with Brian Keith and Tommy Kirk Norman Tokar, director.

DAVID HARCOURT, "The Three Lives of Thomasina" (Technicolor, shooting in England) with Patrick McGoohan and Susan Hampshire Don Chaffey, director

WILLIAM SNYDER, ASC, "Summer Magic" (Technicolor) with Hayley Mills and Burl Ives. James Neilson, director

FILMWAYS — MGM

TOM TUTWILER, ASC, "Shell's Wonderful World of Golf"*

FILMWAYS—New York

MORRIS HARTZBAND, "The Defenders"* (CBS) Boris Sagal and Buzz Kulick, directors

FOX WESTERN AVENUE

JAMES VAN TREES, ASC, "Dobie Gillis"*.

GENERAL SERVICE STUDIOS

LESTER SHORR, ASC, "The Beverly Hillbillies"*

ROBERT MORENO, "Adventures of Ozzie & Harriet"*.

HARRY WOLF, "Don't Call Me Charlie"*.

GOLDWYN STUDIOS

RAY FOSTER ASC, Commercials*

NORBERT BRODINE, ASC, "The New Loretta Young Show"*.

INDEPENDENT

DANIEL FAPP ASC, "The Great Escape" (Mirisch Alpha Prods., PVision & Color, shooting in Munich) with Steve McQueen and James Garner John Sturges, producer director

JOSEPH BIROC, ASC, "Toys in the Attic" (Mirisch Co PVision) with Dean Martin and Geraldine Page George Roy Hill, director

JOSEPH LA SHELLE, ASC, "Irma La Douce" (PVision & Color, Mirisch-Edward Alperson Presentation) with Jack Lemmon and Shirley MacLaine Billy Wilder, director

TED MOORE, "Call Me Bwana" (Eon Prods., shooting in London) with Bob Hope and Anita Ekberg Gordon Douglas, director

RUSSELL METTY, ASC, "The Thrill of it All" (Ross Hunter-Martin Melcher Prod., Technicolor) with Doris Day and James Garner Norman Jewison, director

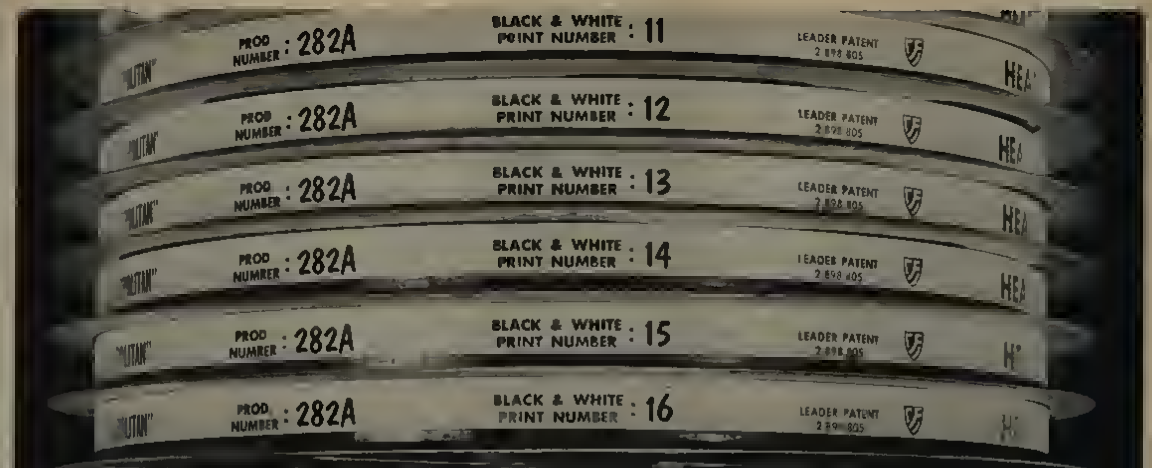
CONRAD HALL, "Stoney Burke"* (Daystar).

GAYNE RESCHER, ASC, "Identical Twins" (Noel Productions, shooting in Conn.) Jerome Hill, director. "Oral Roberts Series"* (Religious Films).

SOL NEGRIN, MIKE ZINGALE, EDDIE HUGHES, AL TAFFET, "Candid Camera"*.

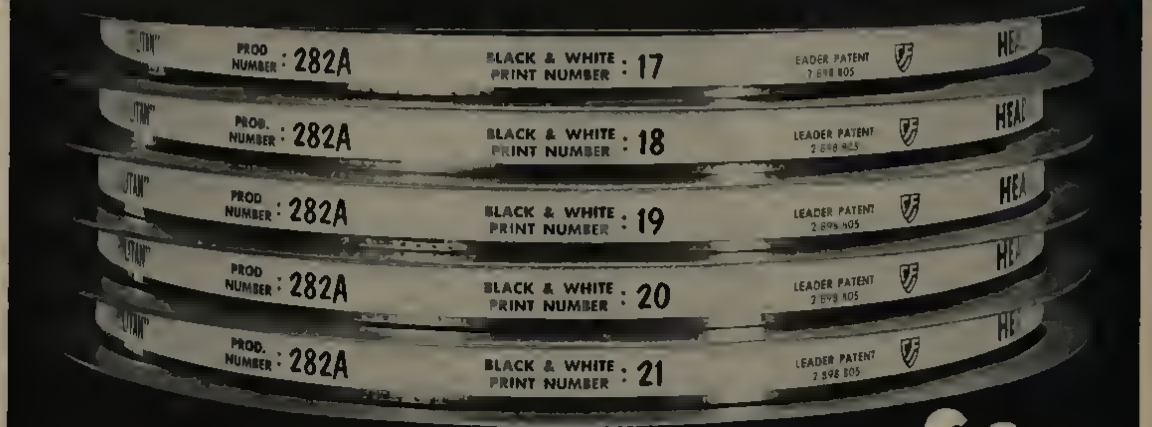
JACK HILDYARD "55 Days at Peking" (Samuel Bronston Prod., Super Technirama 70 & Technicolor, shooting in Spain) with Charleston Heston and Ava Gardner Nicholas Ray, director

Continued on Page 656



AUTOMATIC PROTECTION* AGAINST MISLABELED OR ILLEGIBLE LEADERS ON 16mm RELEASE PRINTS

At CFI, hand labeling head leaders on release prints is obsolete. Identification data, inscribed in the negative leader, is reproduced in the head leader of each release print. When reinforced with white opaque cellophane tape, the result is a more durable leader, which is easy to read and 100% accurate.



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BEHIND THE CAMERAS

Continued from Page 656

INDEPENDENT

WALTER LASSALAY, "Tom Jones" (UA release, Eastman color; shooting in England) with Albert Finney and Susannah York Tony Richardson, producer-director

BURNETT GUFFEY, ASC, "Flight From Ashiya" (Hecht Prod & Dana M. P. Co UA release— P'Vision; shooting in Germany) with Yul Brynner and Richard Widmark. John Sturges, producer, director.

HARRY WAXMAN, "Summer Flight" (Mirisch Barbican Films-Carrollton of Panama; UA release, color; shooting in London) with Susan Hayward and Michael Craig. Daniel Petrie, director.

MANUEL ROJAS, "Year of the Tiger" (Kingman Prod.; shooting in Viet Nam) with Marshall Thompson and Alex Nicol Alex Nicol, director.

WILLIAM CATHCART, "Dementia" (Filmgroup Garrick Ltd., Filmgroup release, shooting in Ireland) with William Campbell and Luana Anders Francis Coppola, director.

WILKIE COOPER, "Mouse on the Moon" (Lee Camp Prod., shooting at Carthay Studios) with Aubrie Martin and Roy Thinness. Dave Tomack, director

SAM LEAVITT, ASC, "Johnny Cool" (Crislaw Prod.; UA release) with Henry Silva and Elizabeth Montgomery. William Asher, producer director

GEORGE FOLSEY, ASC, "The Balcony" (City Film Corp; Continental Distr Co release) with Shelley Winters and Peter Falk Joseph Strick, director.

KEYWEST STUDIOS

FRED WEST, ASC, (Family Films) Series of Religious pictures.

La BREA STUDIOS

ROBERT HAGER, "Perry Mason"*

M-G-M STUDIOS

PAUL VOGEL, ASC, "Drums of Africa" (P'Vision-Metrocolor) with Frankie Avalon and Mariette Hartley James B Clarke, director

ROBERT DeGRASSE, ASC, "My Fourteen Blocks"* (pilot).

TYLER BYARS, Commercials*.

GEOFFREY UNSWORTH, "Tamahine" (Seven Arts Prod., Eastman color, shooting in Paris, Tahiti & London) with Nancy Kwan and Dennis Price. Philip Leacock, director

JOSEPH RUTTENBERG, ASC, "Take Me to the Fair" (Ted Richmond Prod., P'Vision & Metrocolor) with Elvis Presley and Joan O'Brien. Norman Taurog, director.

MILTON KRASNER, ASC, "The Courtship of Eddie's Father" (Euterpe Prod., CScope & Metrocolor) with Glenn Ford, Shirley Jones and Roberta Sherwood Vincente Minnelli, director.

ROBERT PITTACK, ASC, GEORGE CLEMENS, ASC, "Twilight Zone"*.

HANKNESS SMITH, "Dr. Kildare"*.

DALE DEVERMAN, "The Eleventh Hour"*

WILLIAM SPENCER, "Sam Benedict"*

ROBERT HAUSER, "Combat"*.

NEW YORK STUDIOS

GEORGE JACOBSON, "Emmett Kelly Show"*

PARAMOUNT STUDIOS

W WALLACE KELLY, ASC, "The Nutty Professor" (Jerry Lewis Prod., color) with Jerry Lewis and Stella Stevens Jerry Lewis, director.

BORIS KAUFMAN, ASC, "All the Way Home" (David Susskind Prod., shooting in Tennessee) with Jean Simmons and Robert Preston Alex Segal, director

WILLIAM DANIELS, ASC, "Come Blow Your Horn" (E T Prod; P'Vision & Color) with Frank Sinatra and Tony Bill. Bud Yorkin, director.

HASKELL BOGGS, ASC, WILLIAM WHITLEY, ASC, "Bonanza"*.

CHARLES LANG, ASC, "Paris When it Sizzles" (Color; shooting in Paris) with William Holden and Audrey Hepburn Richard Quine, director.

FRANK PHILLIPS, "Have Gun Will Travel"*.

PARAMOUNT STUDIOS—N.Y.

JACK HORTON, "Sport Shorts"*

PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"*

PATHE STUDIOS—N.Y.

GAYNE RESCHER, ASC, "The Nurses"*.

PRODUCERS STUDIO, INC

EMMET BERGHOLZ, 'Death Valley Days"*

REPUBLIC STUDIOS

CHARLES BURKE, "McKeever and the Colonel"*.

WILFRID CLINE, ASC, "Sahara and Stoners"*

HOWARD SCHWARTZ, "The Rifleman"*.

SENECA STUDIOS

EUGENE SHELTAN, "By Any Other Name (Robert Gurney Prods.) Meyer Levin, director

REVUE STUDIOS

BENJAMIN KLINE, ASC, 'The Virginian'*

JOHN WARREN ASC WALTER STRENGE, ASC, "Going My Way"*.

JACK MACKENZIE, ASC, "Leave It to Beaver"*

WILLIAM MARGULIES, ASC, LIONEL LINDON, ASC, RICHARD RAWLINGS, "McHale's Navy"*

NICK MUSURACA, ASC, "Jack Benny Show"* JOHN RUSSELL, ASC, NEAL BECKNER, "Alfred Hitchcock Presents"*

JOSEPH MACDONALD, ASC, "The List of Adrian Messenger" (Joel Prod; shooting in England) with George C Scott and Dana Wynter John Huston, director.

JOHN RUSSELL, ASC, "Challenge Colf"

WALTER STRENGE, ASC, "Wide Country"*

JACK MACKENZIE, ASC, "Leave it to Beaver"*.

ELLIS THACKERY, ASC, "Wagon Train"*.

WILLIAM MARGULIES, ASC, "The Best Years"*

CLIFFORD STINE, ASC, "Three on a Match" (Color) with Kirk Douglas and Mitzie Gaynor Michael Gordon, director.

RUSSELL HARLAN, ASC, "A Gathering of Eagles" with Rock Hudson and Mary Peach Delbert Mann, director.

RAY FLIN, "It's a Man's World"*.

HARRY WAXMAN, "Lancelot and Guinevere" (Emblem Films Prod; P'Vision & Color, shooting in Yugoslavia) with Cornel Wilde and Jean Wallace Cornel Wilde, director

Continued on Page 700

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Inspect every foot before it leaves your plant with the HFC High Speed Heavy Duty Inspection Projectors -- 16mm & 35mm models now available.

NEW

The projector is a converted front shutter Simplex with a two pin intermittent 16mm or 35/32 film runs at a speed of 144 ft per minute while 35mm film runs at a speed of 165 tt per minute

1 A variac controls the light intensity
2 A 500 watt lamp is used for 16mm and a 1,000 watt for 35mm (a blower is used to cool the lamphouse).
3. A 2½ inch projection lens is furnished with each unit
4 A start stop lever controls the power to the lamp and motor
5 The magazine and take up core takes up to 3,000 tt of film.
6. Upper guide rollers are made to handle the film from either direction of the feed reel.
7. A free wheeling take off flange is provided in the magazine.
8 A lamp near the takeup reel permits hand inspection of the film prior to takeup

NOUVEAU

Le projecteur contient un obturateur Simplex anterieur transformé avec deux clavettes intermittent Les films de 16mm ou 35/32 tournant avec une vitesse de 144 piads à la minute, tandis que les films de 35mm tournent avec une vitesse de 165 pieds a la minute

1. Le regulateur de voltage d'intensité d'eclairage
2 La lampe de 500 watt est nécessaire pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mise pour rafraichir la chambre de la lampe)
3 L'objectif de 2½ est instalé
4 La manette de mise en marche et d'arret controla an meme temps la lampe et le moteur
5 La boite de films avec noyau peut contenir 3000 pieds du films
6 La roue supériaure est construite de manière de recevoir le film dans les deux directions, nourrie par la bobine centrale.
7 Una roue est instaléa pour libérer rapidement le film de la boite
8 La lampe se trouva pres de la bobina recepteuse, et donne toute facilité pour inspecter la film a main dans le projecteur.



NUOVO

Questi proiettori sono Simplex transformati otturatore al fronte, meccanismo di scatto di due punte La velocitá di proiezione in 16 o 35/32mm e di 144 piedi per minuto, e in 35mm, di 165 piedi per minuto

1. Controllo manuale della luminositá della lampada
2 Lampada di 500 watt per 16mm e di 1000 watt per 35mm
3. Obbiettivo di proiezione di 2½"
4 Maniglia per controllo di motore e lampada di proiezione
5 La cassetta porta pellicola puo contanere 3000 piedi.
6 I rulli superiori di guida sono construiti per operare con film provananta di ambi lati della bobina svolgitrica
7. Disco con montatura sporgenta nal magazzino
8. Una lampadina illumina la bobina avvolgitrice, permettendo l'ispezione manuale del film prima che si avvolga nel proiettore.

NUEVO

Esta máquina es un proyector simplex convertido, obturador al frente y movimiento intermitente a dobla grifa. Para 16mm o 35/32mm, la velocidad fija de proyección es de 144 pies por minuto, para 35mm es de 165 pies por minuto

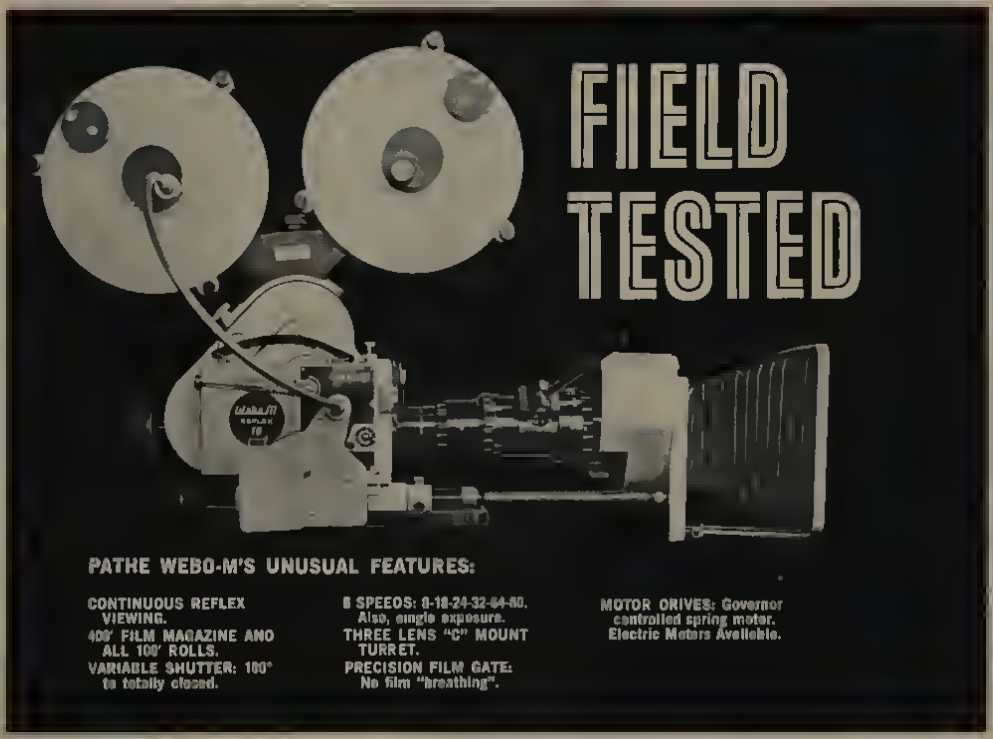
1. Un reostato controla la intensidad de la lampara de proyección.
2 Para 16mm se usa una lampara de 500 watt, y una de 1000 watt para 35mm (un chorro de aire ventila las lámparas en ambos casos)
3 Cada unidad está provista de un lente de proyección de 2 pulgadas y madia.
4. Una palanca de control opera el motor y la lampara simultaneamente.
5. Capacidad da proyección rollos de hasta 3000'.
6. Los rodillos de guia superiores operan con la pelicula en ambas direcciones.
7 La tapa de la bobina de carga es desenroscabla
8 Una lampara ubicada junto a la bobina de toma permite la inspección manual de la pelicula antes que se rebobine an la bobina superior del proyector

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PATHE

PATHÉ PLUS IMAGINATION SOLVES A PROBLEM

Recently, Delaware Park Race Track in Wilmington had a problem. They were not satisfied with the 16 mm cameras they had been using in the patrol stations. They wanted a true reflex camera that could handle 400′ rolls of film. Price and quality both were important considerations.

Pathe's common market engineered Webo-M 16 mm Reflex together with the imagination of Cine Service Laboratories of Watertown, Mass., solved the problem very nicely. Cine Service mounted the forward reel of Pathe's 400′ magazine and fed the film onto a small take up reel inside the camera.

Results for both Delaware Park and Cine Service Laboratories were "gratifying from the optical and mechanical standpoint." The film saved through the use of the 400′ reel on the Pathe was substantial.

Saving money comes naturally to users of the Pathe Webo-M 16 mm Reflex. Equipped with an SOM Berthiot 25 mm f:1.4 lens, the Pathe Webo-M costs you less than $530.

Solving problems is nothing new to Pathe's Webo-M. This 16 mm reflex lets you produce every movie making idea. You can use it as a light weight hand camera for news and fast action filming. It weighs less than 6 lbs. When you add the 400′ magazine, you have a high mobility studio camera.

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Q & A

Technical Questions and Answers

Duping Kodachrome II

Q.—*Having located desirable stock shots filmed on 16mm Kodachrome II, I am now told that duplicates cannot be made from this film Is this true?* —D N. Portland, Oregon

A.—While Kodachrome II is designed for projection as an original, Eastman Kodak Company will make duplicates from original Kodachrome II This is not a low contrast film as used commercially for producing projection prints in large volume Also it cannot be successfully intercut with commercial color films such as Ektachrome where release prints are to be made.

Mixing Inkies with Daylight

Q.—*Im planning to shoot a number of interiors where a great deal of daylight will be coming through windows What kind of bulbs should I use for fill light to bulance the interior with the exterior light? Also, once I have lit the set as required, how do I evaluate exposure—with a reflected or incident light meter?*—M. S T, Los Angeles, Calif

A.—You do not say whether you will be shooting color or black-and-white film We'll assume it's color. If there is a preponderance of daylight coming through the windows, use photofloods or similar lights which you can bolance with the daylight either by appropriate filters placed in front of the lights or by using blue photo floods An incident light reading taken from position of subject or subjects with the hemisphere light collector facing toward the camera, will measure accurately the total light falling upon the subject of your photography.

Should one or more windows face the camera directly, then it may he necessary to cover same with appropriate filtering material to reduce glare and/or amount of daylight coming through Should this situation prevail, it would be better to reposition your camera so it does not face the windows

8mm Duplicates

Q.—*I Produce quite a number of 8mm films for which I would now like to have duplicates made However, I am told that good 8mm color duplicates are hard to produce. Is this true? If not, can you tell me where or how I can have good quality duplicates Made?* —D W. Vancouver, BC, Canada

A.—The quality of 8mm duplicates depends entirely upon the original film —that is, whether the original was photographed on 35mm, 16mm or 8mm stock. Good 8mm duplicates—the kind required for commercial sale —are usually photographed on the wider 35mm or 16mm film, then reduction-printed on 8mm There has been little or no success in duplicating 8mm to 8mm for commercial purposes

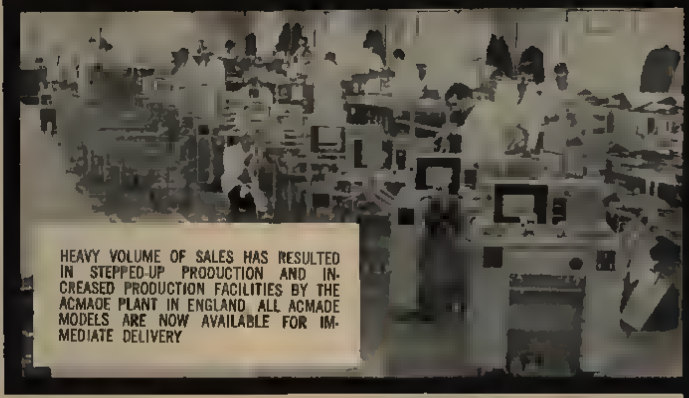
Mixing Color Films

Q.—*Would you advise using both daylight and tungsten color films in photographing a 16mm production for which a number of prints are to be made? Can I use filters such as Aero. K2, and C5 with daylight color film to effect an approximate match with tungsten color film?*—A E J, Phoenix, Arizona

A.—First, if it is at all possible, use all one type color film for any production that is to be duplicated

The filters named above are for use with B&W film and should not be used with color film, except for some unusual color effect. One of the chief factors which influences the reproduction obtained with a color film is the spectral quality of the illumination employed in exposing it Not only do daylight and artificial light differ from one another in spectral color quality but individually each is subject to considerable variation If, for some reason you must use both films, use the proper Kodak Wratten filter to balance one with the other. ■

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This moderately priced splicer incorporates new precision features which insure absolute accuracy and safety in splicing. Three models are available: Model 16-16mm. Model 35-35mm., Model 35-16 combination 35mm. and 16mm.





1. The combination 35mm-16mm. Madni features retractable 35mm. and 16mm. pins. This permits center placement of the 16mm. pins for A and B roll splicing.



4. Specially designed right hand pressure block permits easy and accurate back scraping on all models.



5. Tempered steel springs provide perfect pressure, positioning film firmly during scraping and splicing processes.

6. Thermostatically controlled heater maintains constant 100° temperature.

2. Stainless steel blocks are precision fitted with Tungsten-Carbide inserts for cutting. Cutting edges will remain sharp and last forever.

3. Attached scraper adjustable for depth — fitting jig incorporated on splicer base.

Model 16 — $299

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Model 35-16 — $399

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Combination
16mm-35mm
Model

$1495

This splicer is constructed, as is usual with ACMADE products, of the finest materials and workmanship. All castings are of the best quality and the top, body and cutter arms are seasoned to prevent distortion after machining. The machining is carried out to limits of ± .0005" in order that the cutter blades shall close in a fine parallel manner. The cutter blades are made from stainless steel with Tungsten Carbide inserts, and afterwards ground, lapped and polished to a limit of ± .0002" thickness and the cutting edges relieved by 1°. The Tungsten Carbide inserts will have indefinite life and will not require sharpening as with other types. A heater unit is installed in the top body of the machine. The top light in a well glass fitting is attached to the body of the machine and also an inspection light in the waste bin to gether with cement bottle and brush. A scraper block is supplied and also a scraper block setting jig and support shelf rubber-covered. The whole machine is finished in first quality gray hammer and all metal parts other than cutter blades are hard flash chromed.

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AFTER THE FILM editor arranges the workprint scenes in the desired order, cuts them to the desired length, then splices them together, the result is an "edited workprint."



EDGE NUMBERING—Tiny serial numbers ink-printed at intervals on one edge of film cut editing time and simplify matching of work print with orig nal and sound track.

16mm WORKPRINT EDITING

To protect 16mm original film from wear and tear of handling during editing most producers utilize a workprint. Here are some tips on ordering workprints and for using them in the preparation of the camera original for release prints.

THE CHIEF PURPOSE of editing with the aid of a workprint is to protect the original film. In both theatrical and non-theatrical film production, 16mm and 35mm, the purpose is the same. All editing, re-editing, post-recording of sound and other handling utilizes the workprint (or dailies) in order to spare the original film or camera negative from unnecessary and dangerous (to the film) extra handling.

While it is true that workprint editing does involve additional expense, the few cents extra cost per foot for the edge-numbered workprint is cheap insurance for your original. Actually the cost for a workprint is relatively small compared to what it would cost to restage and re-shoot a scene because it was scratched, wrongly cut or otherwise rendered unusable through editing the original.

In 16mm film production, the term *workprint* is universally understood. But because workprint editing sometimes involves some conflict in terminology within the industry, let us clarify the matter at this point: Both theatrical and television film producers tend to use well-established 35mm terms regardless of whether they produce in 35mm or 16mm, whereas the non-theatrical producer's terminology is partly borrowed from the theatrical film maker, partly invented to suit his own needs.

Thus theatrical film production, which is basically 35mm, utilizes a 35mm negative in the camera from which is made, on the producer's order, daily prints or "dailies" of selected scenes. The dailies are printed on positive film and the negative key numbers (latent image numbers exposed at intervals along one edge of the undeveloped raw stock by the manufacturer) are printed through to the daily print along with the picture image. As a rule, the dailies are timed to even out any exposure variations in the negative. Only after the daily scenes are cut together is the edited film known as a workprint. In theatrical film production workprint means "edited dailies."

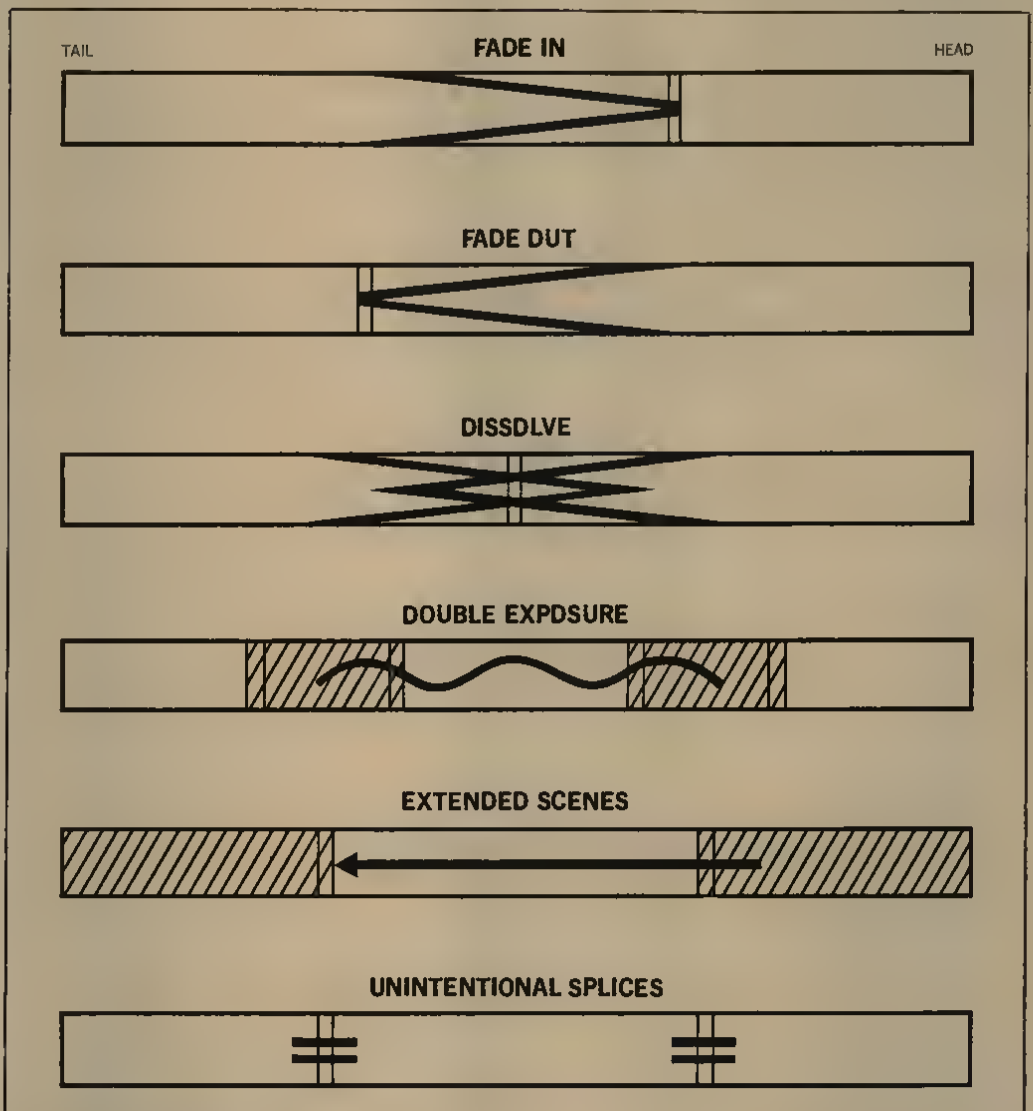
The procedure is different in 16mm film produc-

tion. The non-theatrical producer who shoots with 16mm film, invariably utilizes one of the 16mm reversal-positive film stocks in the camera. While it is true that non-theatrical productions are shot in both 35mm and 16mm, and on 16mm negative as well as 16mm reversal, most non-theatrical production such as industrial films, in-plant film making, contract film reports, etc., are in 16mm and the bulk of this is shot on 16mm reversal film, both color and black-and-white.

When 16mm reversal film is used in the camera, it is termed the "camera original" or "original" film. To call it "camera negative" is inaccurate and can be confusing when dealing with a laboratory that caters particularly to the 16mm non-theatrical film maker.

After the camera original has been processed and

Continued on Page 692



METHOD OF MARKING workprints to indicate desired optical effects as a guide for the laboratory making the release prints. Chart is reproduction of General Film Laboratories' Producer Service Bulletin No. 1, first in a series now being distributed by the company to producers and others in the motion picture industry. The methods and symbols are same as used by all major laboratories.



EXPERIENCED film makers learn early the importance of distinguishing between A and B wind 16mm film, and standard and non-standard emulsion positions. Such knowledge is important to preparing films for the laboratory when prints are to be made (Photo courtesy Space Technology Laboratories, Inc.)

A-WIND— B-WIND— WHAT DO THEY MEAN?

Laboratory language worth knowing that will expedite your film print order.

A-WIND, B-WIND, Standard, Non-standard — what kind of gobbledygook is this? Just what does it mean?

These are terms you'll likely run into at the laboratory when ordering prints of a 16mm film for the first time. The terms refer to the manner in which single-perforated 16mm film is wound on cores or spools with relation to the emulsion position.

When ordering sound tracks or masters from the lab, stock footage from a library, or placing orders for 16mm prints to be used on television, invariably these questions will be asked:

"Do you want A- or B-wind?"

"Is it standard or non-standard?"

The terms A-wind and B-wind indicate which side of single-perforated 16mm film carries the perforation. Remembering the following two points will simplify the problem:

1. 16mm single-perforated film as it comes from the camera is usually B-wind. (Some cameras take up film emulsion-out, which is neither 'A' or 'B'; but generally the emulsion is "in" and the perforations in B-wind position.)

2. Printing the film normally reverses the wind to A (See illustration).

"Standard" and "Non-standard" refer to the emulsion position on the film—that is, whether it is toward you or away from you as you look at the film unwinding toward you from the top of the spool, with the sprocket holes at the left.

The Standard emulsion position is the same as indicated for B-wind in the illustration—away from you, with the film base toward you. Non-standard emulsion position is the same as A-wind, with the emulsion side of the film toward you.

The origin of the emulsion position problem in 16mm film production goes back to the days when 16mm was basically a film for amateur movie makers. When the standards for 16mm were first set up, it was considered that the camera film would also serve as the film to be projected, after reversal processing, and therefore the emulsion position in the projector should be the same as its position in the camera—*toward the lens*. Therefore a Standard print today has the emulsion toward the lens in projection. A Non-standard 16mm print will have the emulsion just the reverse, otherwise known as A-wind.

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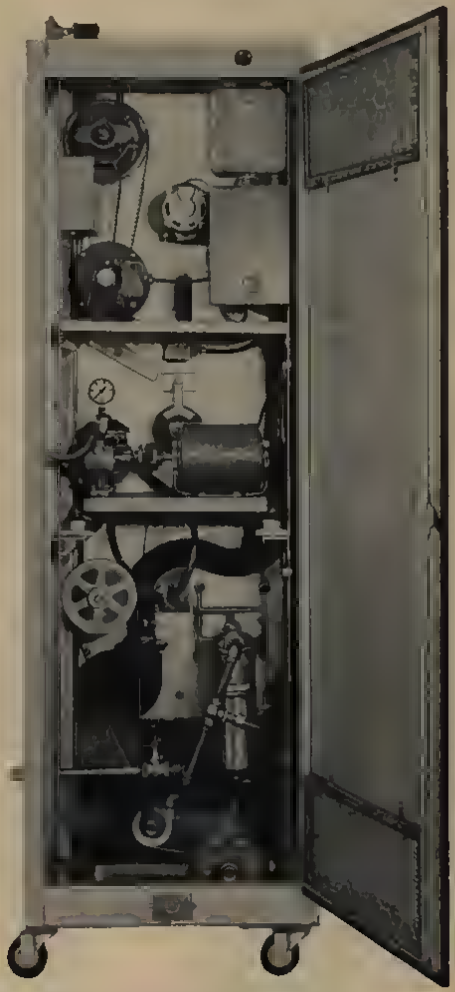


HOW to tell A wind from B-wind 16mm single-perforated film

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TRACKING A MISSILE launched from Cape Canaveral. The cameras are manually operated but some, used for the same work, are operated by remote control. Note sandbags at base of the heavy-duty tripods that add to their rigidity

Role Of Cinematography At Cape Canaveral

Our missile development program relies heavily on cinematagraphy to supply data nat otherwise abtainable thraugh instrumentatian and observatian. A rautine missile launch, for example, may involve as many as sixty cameras and related equipment.

By DARRIN SCOT

FLORIDA, WHOSE CITIZENS once hopefully expected it to become an important motion picture center, actually has achieved this goal. But instead of making movies for theatres and TV, its film industry is devoted to more serious things like the development and launching of missiles. Nerve center of this far-flung filming activity is Cape Canaveral, Florida.

Whenever the U.S. launches a new type missile or sends an Astronaut orbiting into space, the eyes of the world are momentarily focused on Cape Canaveral, a bulge of land jutting out into the Atlantic from the eastern coastline of central Florida. Trained on the event and recording it for a number of important purposes are as many as a hundred and twenty still and motion picture cameras operated by cameramen of the Radio Corporation of America.

For more than seven years now RCA camera crews, working under sub-contract to Pan-American World Airways, have been filming everything of importance that happens at the Cape. This work was originally assigned as a Civil Service function. It expanded rapidly and soon a more ambitious type of operation was needed. At this point RCA was called in, absorbed the bulk of the personnel and equipment already functioning, and expanded operations to the point where 130 cameramen now provide 24-hour a day photographic coverage of our space and missiles programs at the Cape.

Just as the activities at Cape Canaveral are unique so, too, are the problems encountered in photographing them. Perhaps the most significant of these has to do with estimating exposure when the



THE RCA CAMERA CREWS have utilized almost every ty of motion picture camera made. The 16mm Mitchell, ho ever, is the standard for shooting assembly, erecti launch and tracking of missiles



FRANKLY, YOU'RE DOING JUST THAT, if you're buying top-quality negatives—and "economizing" on prints. Fact is: to do its job, a crisp, clear negative must have top-quality prints. Otherwise, your message falls flat and you've wasted negative *and* print costs. Moral: Go Eastman *all* the way—negative and print stock. And in the case of questions — production, processing, projection — always get in touch with Eastman Technical Service.



A BANK OF TRACKING MOUNTS with cameras on location preparing to record the launch of and to track a missile. As many as five cameras may be set up on one tracking mount, and are equipped with telephoto lenses ranging from 80mm to 160mm

launching of a missile, set for a particular moment, is later postponed. Some of the most important footage exposed during a launch is filmed by twenty or thirty remotely-operated cameras set up within the pad area, a highly restricted zone. Each of these cameras must be set for exposure manually and checked out far in advance of launch time, because once the camera technicians leave the area they are not permitted to return for any reason whatsoever until after the launch takes place.

If a launch is scheduled for eight o'clock in the morning it is possible to predict exactly where the sun will be at that moment and also, on the basis of late weather reports, whether or not there will be clear sunlight. Exposure for each camera can be estimated accordingly and pre-set with a certain degree of accuracy. If, however, T-time (the moment of actual launch) is postponed until noon or late afternoon, the sun will be at an entirely different angle and the amount of exposurable light will differ greatly from the original estimate. The situation becomes especially critical when such events are to be photographed on color film, which has an exposure latitude of only about one stop in either direction.

Since this problem has not yet been solved, cameramen are hard-pressed to apply some sort of second-sight to outguess the elements in case of a postponed launch. It is expected that a method of electric-eye automatic exposure control will ultimately be adopted to overcome the problem.

RCA's photographic coverage extends all the way down the Atlantic Missile Range to Ascension Is-

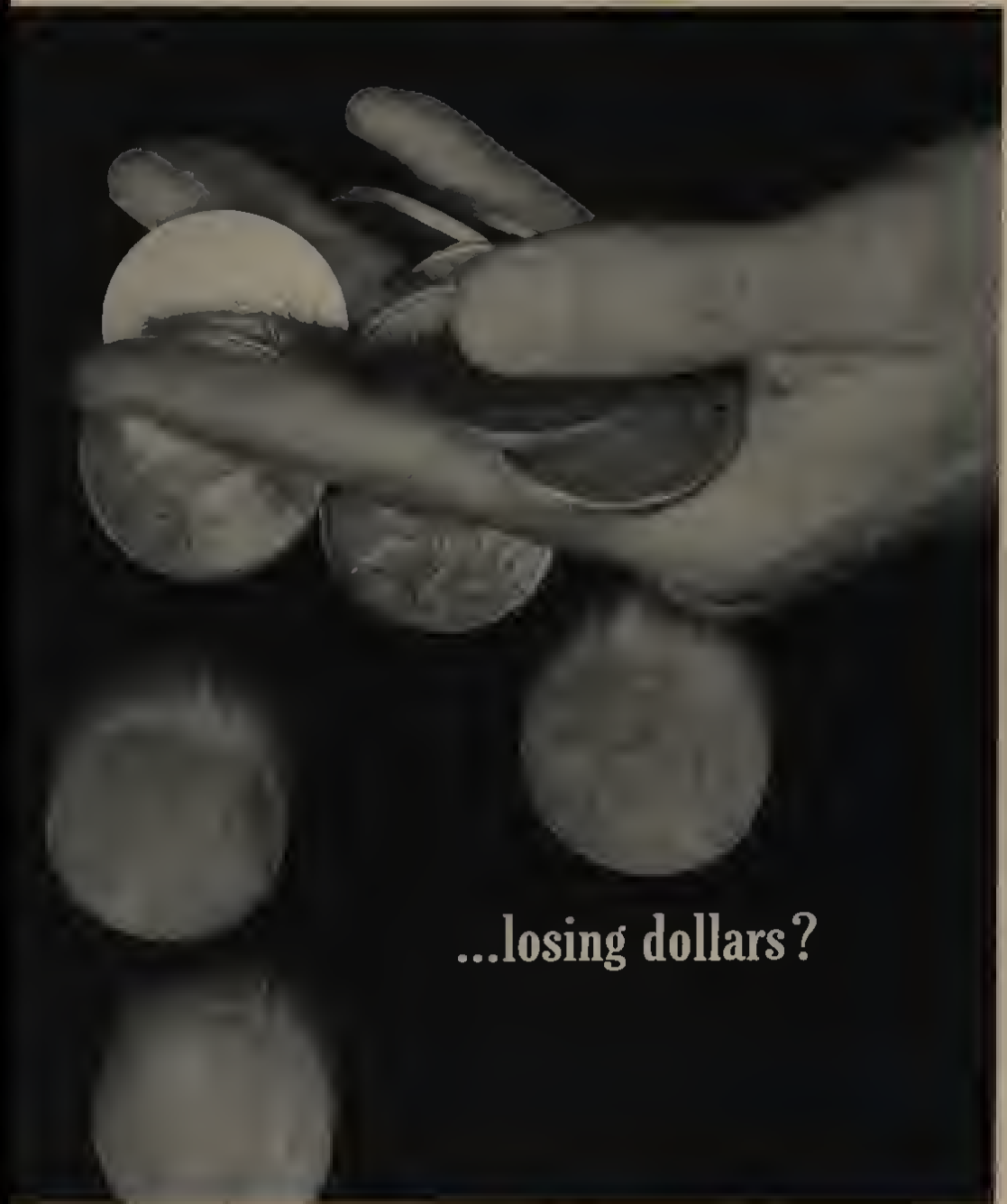
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RCA CAMERAMAN Ken Lee keeps his subject centered by means of viewfinder of Zoomar Mirotel lens mounted on 35mm Mitchell camera. Most of the equipment is painted white to minimize heat absorption when working in bright sunlight



RECORDING LAUNCH of a Titan missile with a Mitchell 16 camera tripod-mounted on rear deck of pickup truck. A measure of ready mobility for some cameras is maintained constantly. (All photos courtesy U.S. Air Force.)



For further information, please write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and TV, Fort Lee, N.J., Chicago, Ill., Hollywood, Calif.

EASTMAN FILM

SMALL LIGHTS FOR BIG

A SIGNIFICANT trend in general motion picture production is the increasing use of compact, portable lighting equipment. Small, lightweight units, economical to operate are being used to illuminate both studio and location interiors, for booster light on exteriors, and to provide illumination where heavy-duty equipment cannot be used.

The first major step in this direction occurred in 1939 when L. V. Grover of Los Angeles developed the ColorTran system of "boosted-voltage" illumination whereby the application of increased voltage to a tungsten filament lamp caused it to burn with



COLORTRAN

ColorTran, originated in 1939, was the forerunner of the boosted voltage method of photographic illumination Utilizing standard lamps such as PAR 64 and 56, R-60, R-40, etc., in ColorTran housings, intensities of these lamps can be increased approximately 400% and their color temperature ratings boosted to 3450° Kelvin by means of a ColorTran power converter which is an integral part of the system

ColorTran lamps are available in more than 8 different models, each serving a specific purpose These include the Cineking, Super Kicker Light, Kicker Light, Groverlite Junior, Groverlite Senior, Superior Six, Superior Single Scoop, and Striplite Other models are in course of development

A range of six ColorTran converters are available that supply power needs and controls for ColorTran lamps used singly or in groups to seven.

Available also is an Industrial Motion Picture Kit (pictured) that includes 8 lights, 8 stands, 2 converters gaffer grips etc., and provides up to 80,000 watts of controlled illumination, said to be ample to illuminate an area of 60 linear feet Smaller kits are also available The Cineking unit, utilizing a Par lamp, provides illumination equivalent to a 5K studio light



QUARTZ-KING 650

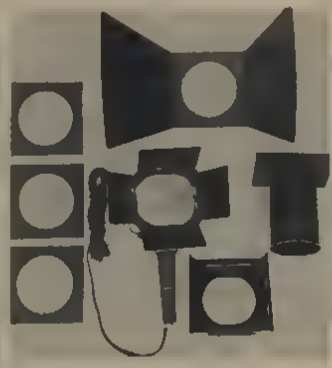
This is another lightweight ColorTran lighting unit borne of the development of the quartz-iodide lamp Actually, the Quartz-King 650 combines a 650-watt quartz-iodide lamp with a reflector housing that is guaranteed not to tarnish. As with other quartz iodide lighting units, it operates directly from un-boosted 110-V AC current

A round instead of oval, light pattern is claimed for the unit which is said to provide extremely smooth illumination of 390 FC at 10 feet, with an 8 foot diameter of light in excess of 100 FC

The Quartz King 650 is available in three models: Medium Flood with universal yoke that permits mounting on light stands or horizontal or vertical bars. It is tapped to receive tripod studs Unit is adjustable for horizontal or vertical lamp orientation and is supplied with 10-foot 3 wire cable having in line switch

The integral mogul base model provides medium flood and may be used in any housing designed for mogul base lamps

The integral medium screw base model provides wide flood pattern only — a wider, more even light pattern than a scoop The unit may be used in any lamp housing with medium screw (household type) socket.



SUN GUN PRO

The Sylvania Sun Gun Professional was first of the quartz iodide lamps to gain recognition as proven illumination tool for professional use (See *Amer Cinematographer* for May, 1962.) It is a 110 V AC 1000 watt lamp with high and low illumination switch having illumination volume of a 5000-watt floodlight and with same beam angle Housing is similar to earlier model designed for amateurs, having plastic grip for hand-held use and a threaded receptacle in base for mounting on camera bracket, tripod, century stand or other holder

Unit has proved ideal booster light source for moving vehicle shots and for lighting location interiors Because of its compactness and range of professional lighting control afforded by accessories (pictured) lamp is finding increased use among industrial and small in-plant photographic units.

Basic unit is equipped with 4-leaf barndoor Optional accessories include large barndoor daylight filter, diffusion scrim, 3200°K filter, portrait lens, snoot, optical sniper snoot and accessory holder

Approximate color temperature is 3400°K High position illumination is 65,000 centerbeam candlepower (cbc); low position 15,000 cbc Net weight is 3 lbs.

JOBS

increased intensity. Under these conditions, the spectrum of the lamp's illumination shifts toward the blue, and its color temperature is increased. A lamp that normally burns at 2900°K can be boosted to 3450°K and its intensity can be increased approximately 400 per cent.

Newest development in the small-lamp, high-intensity illumination field is the quartz-iodide lamp which made its most significant impact in the U.S. in the form of the Sylvania Sun Gun. Since then, the Q-1 lamp has been incorporated into other light-

Continued on Page 681



GARNELITES

Garnelites are similar in design and function to ColorTrans in that PAR 56 and PAR 64 lamps are employed and stepped-up in intensity by means of a power converter. 300 watt PAR 56 lamps can be boosted to give illumination equivalent to that of a "Junior" 2 KW lamp at 3300°K 500-watt PAR 64 lamps can be boosted to the equivalent of a "Senior." Up to four PAR lamps can be operated at one time through the converter.

PAR globes are available in three types: Narrow Spot, Medium Flood, and Wide Flood permitting wide versatility in lighting with the same Garnelite lamp heads Latter are available in two models: the 300W 500W, and the All-Purpose—the latter designed to use 500, 750, 1000- and 1500 watt globes stepped up through the Garnel converter. Both lamp heads have yokes that will fit any baby stand or hanger

Accessories include barndoors, lightweight stand diffusers and scrims, plus a series of heat-treated lenses for controlling light quality and color. The "workhorse" converter has 4 switches that control lights individually; the "Executive" affords individual control and metering to give voltage and C T. Readings for both B&W and color photography It is adaptable to both 110-V and 220 V operation



NOVA TWIN

The Nova Twin utilizes the new quartz-iodide lamps — two of them — in a sturdy lamp housing resembling the conventional "broad" used on studio sound stages. Latest model Nova Twin (Type NTC, pictured above) features interchangeable reflector assemblies so that with a single lighting unit it is possible to control the beam angle and specularity to match subject requirements Nova lamp housings are available with choice of three two lamp reflectors:

Type 1, medium beam Intensity at 10 feet 720 foot candles (FC) with 3400K lamps: 630 FC with 3200K lamps

Type 2, medium broad beam Intensity at 10 feet: 252 FC with 3400K lamps, 425 FC with 3200K lamps.

Type 3, broad beam Intensity at 10 feet 460 FC with 3400K lamps, 360 FC with 3200K lamps.

Reflector assemblies are quickly interchangeable by means of four thumb screws Snap-on terminals provide instant disconnect of electrical wiring. Other accessories include barndoors, diffuser frame assembly, diffusers, and Nova stands

The portable Nova Twin Kit consists of two Nova Twins complete with quartz-iodide lamps, 2 Nova stands, two 25-foot extension cords and sturdy carrying case.



LOWEL-LIGHT

Unlike other lighting units described in these pages, the Lowel-Light is essentially a mounting bracket for photolamps It is generally considered a lighting unit when it supports a reflectorspot, reflectorflood, or similar high intensity photolamp.

The Lowel-Light consists of a heavy porcelain lamp socket attached to a tilting and swiveling support extending from the mounting plate. There is no lamp house—the built-in reflector of the photolamp used serving this function

The Lowel-Light began modestly as an ingenious bracket for mounting photolamps conveniently on walls, window or door frames, pipes, furniture, etc Mounting on flat surfaces is by means of Gaffer Tape, and on water pipes, etc, by the novel notch-and-chain mounting feature The notched feature also permits mounting the unit on plane surfaces such as shelves, edge of doors, venetian blinds, etc

A kit of Lowel-Lights and accessories (pictured) is available that is designed to meet most on-location lighting needs In a sturdy carrying case are 6 Lowel-Light fixtures 6 barndoors, 2 nine foot stands, and three 25 foot extension cords with 3-way outlets, 1 roll of Gaffer Tape, and special apertures and foam padding to hold six R40 reflector bulbs (not included)



THE TITAN, with boom at maximum height and with extension in place. Camera platform will accommodate camera, 2 cameramen, and director



BOOM AT ground level. It can go lower, as when shooting over a cliff or with camera lowered into pit

Superior Maneuverability in Boom Shot Photography

Titan, newest and largest of Chapman mobile camera cranes, features a number of innovations that simplify the execution of boom shots.

By JOSEPH HENRY

THE MOBILE CAMERA CRANE has become such an indispensable part of cinematography that it is hard to imagine a studio shooting a production without one. The advantages of the camera crane are many, not the least of which is the time saved when changing camera set-ups and also the great variety of camera angles it affords.

Today, in most film production centers, the words *camera crane* are synonymous with Chapman, for Ralph Chapman of North Hollywood has designed and built the industry's most versatile and dependable cranes for more than 20 years. Last month, Chapman's newest, largest and most versatile crane —the Titan—impressively demonstrated its superior maneuverability when Director of Photography Clifford Stine, ASC, used it in photographing a sequence of scenes for Universal-International's "Three On A Match," starring Mitzi Gaynor and Gig Young.

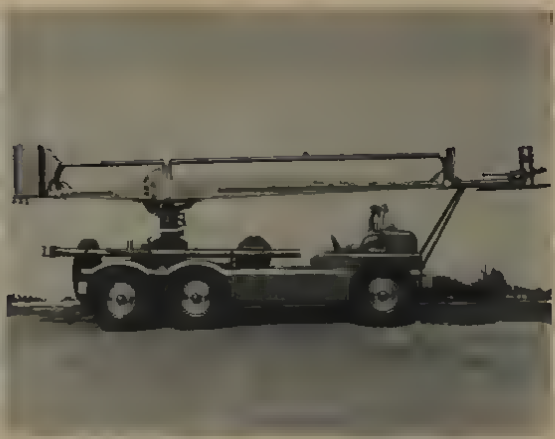
The Titan, as the name implies, is the biggest of all cranes constructed todate. It is a self-propelled, 6-wheel-drive location and sound stage camera crane, dual-powered by a Ford V-8 engine and a battery-driven motor which function in unison or independently of each other. The new, improved boom arm may be raised to a maximum height of 27 feet (floor to camera lens). Maximum horizontal reach of the boom beyond chassis, with extension added, is 29 feet. Built to support 2000 pounds or more, the camera platform is designed to accomodate, in addition to the camera, the operator, director, and key or fill lights.

Chassis

From the radiator grill to the rear-wheel fenders, the Titan's mobile chassis reflects class and moderni-



BOOM WITH EXTENSION, at full horizontal position shown here, permits shooting a football game with camera directly over midfield



TITAN BOOM folded for traveling or storage. Chassis is both gas motor and electric motor driven—the latter for use on sound stage

ty in design and performance—real production value. The specially constructed chassis features a six-wheel drive with remote-controlled steering for the four rear wheels that permits sharp turns in a fifteen-foot radius and "crabbing".

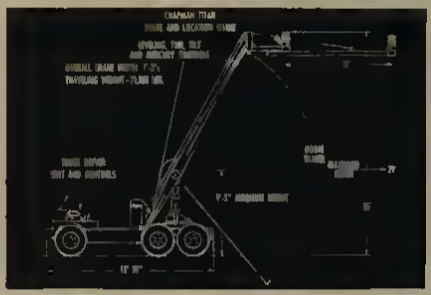
Heavy ballon tires having special treads provide smooth travel of the unit on sound stage floors and enable it to operate efficiently in loose sands of beaches or desert. The rear-wheel fenders are instantly removable to give the crane operator unobstructed view of the wheels when driving backwards in making a shot.

Selective hydraulic levelling of chassis is accomplished in a matter of seconds through push-button controls that set the chassis with elevated boom fully level or at any number of angles to conform with the uneven terrain often encountered on location. All of these features are also adaptable to sound stage operation of the unit.

Powerhouse

A powerful Ford V-8 gasoline engine and an electric motor operable either by batteries or 110-volt D.C. current may be operated together or independently to move the Titan. The gas engine power is for conventional highway use of crane and for shooting location exteriors. The electric motor drive is used to propel the crane on the sound stage. Using the gas engine the Titan can cruise with ease at 55 miles per hour, enabling it to travel with studio equipment convoys to location sites. The transmission has five forward gears, which can be twice reduced in emergency situations, and power can be concentrated whenever necessary on any

Continued on Page 690



SCHEMATIC OF the Titan, showing maximum and minimum limits of boom position, extent of reach, etc



RALPH CHAPMAN, head of Chapman Studio Equipment, originator of the well-known Chapman mobile camera cranes which, today, are used throughout the world in feature film production. The 'Titan' is latest, largest and most versatile of them all



APCS Cameramen— Eyes Of The U.S. Air Force

Air Photographic Charting Service cinematographers' assignments range from combat filming to shooting training, briefing and report films.

BY HERB A. LIGHTMAN

EDITOR'S NOTE: Following is the first of a series of articles detailing the activities of the Air Photographic and Charting Service in its mission to provide motion picture, television and still photographic services to the United States Air Force. The series is the result of invitational visits made to the various detachments of APCS by the author, during which he accompanied crack Air Force camera crews on various filming assignments.

A HELICOPTER, its rotor out of commission, crash-lands in shallow salt water. Both the pilot and the camerman survive and the latter quickly retrieves his camera and carries it submerged in a bucket of water to a nearby laboratory where it is washed of the salt water and the film removed and immediately put through developing solutions that save the valuable images the cameraman risked his life to record.

In the Antarctic, an ice floe on which a scientific recording station had been established, breaks up prematurely and heads rapidly out to sea. The temperature is 60 degrees below zero and as rescue crews strive to save personnel and valuable equipment stranded on the floe, two cameramen record

U.S. AIR FORCE cinematographer photographing flight of bombers in action—just one of the many highly-diversified assignments handled every day by these sharply-trained photographers





WHETHER IT S in far-away Viet Nam or somewhere in the snowbound regions beyond the Arctic circle, APCS cameramen confidently tackle their assignments and turn in creditable photographic results thanks to their highly specialized training

the heroic effort on motion picture film—stuffing their hand-held Eyemo cameras inside their warm parkas when not actually shooting in order to protect camera mechanisms from the extreme cold.

At Vandenberg Air Force Base in California a huge missile roars into the sky, suddenly veers off crazily from its calculated path and is detonated in the air by safety control officials. A cameraman, completely exposed in a training mount only 2,500 feet from the launching pad, films the entire action while huge chunks of missile debris rain down about him.

Somewhere in Vietnam, a cameraman parachutes from a plane on a counter-insurgency mission and, as he hits the ground, immediately begins filming activities of the forward air controller.

These are typical examples of photographic experiences encountered by U.S. Air Force motion picture cameramen of the Air Photographic and Charting Service, known in military shorthand as APCS.

APCS is the Military Air Transport Services subcommand responsible for meeting United States Air Force requirements for still and motion picture photography, aerial mapping photography, electronic aerial surveys and missile site surveys. It has gained its broadest reputation in still and motion picture work—an activity which is divided into four general categories: *documentation* of significant Air Force activities for both current information and historical reporting programs; *production* of motion pictures for training, briefing and reporting; *distribution* of films worldwide; and the operation of a *depository* where important film holdings of the Air Force can be serviced, preserved and stored.

The documentation capability resulted from the need by the Air Force at the beginning of the Korean War for a group of military cameramen who were combat-trained and prepared to move into action along with our fighting forces. Their mission then, as now, was to record Air Force actions for historical record, for military study and for public relations purposes. Today, APCS trains and maintains a combat-ready force of military camera crews strategically positioned throughout the world—including such areas as Alaska, Hawaii, the Philippines, Japan and Germany. They are geared for immediate action halfway around the globe or anywhere in our Zone of Interior. A special force of military cameramen is assigned to the Strategic Air Command within the United States—their combat assignment being to cover all phases of any SAC strike, launch of the force, recycling of bombers and

Continued on Page 696



ATOP APCS camera cars at the far-end of a jet-age military runway, trained cinematographers photograph the performance of an Air Force bomber for study by engineers. (All photos courtesy U.S. Air Force)

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A-WIND, B-WIND

Continued from Page 666

Why Are Standard Prints Preferred?

Standard 16mm prints are preferred because the film industry is geared to standards designed to maintain quality and uniformity of equipment. Projectors are designed for B-wind prints. While it is possible to focus for picture when non-standard prints are projected, there is the problem of focusing the sound track.

Where the camera film is B-wind and printing reverses the wind to A, standard emulsion or B-wind prints can be made from a B-wind original in one of three ways: 1) By contact printing through the base of the film. In contact printing, the raw stock is held in direct contact with the film bearing the image to be copied. The fault with this method, however, is that the resulting print will be soft in focus or unsharp. 2) By optically printing through the base of the original film and refocusing to sharpen the print image. Cost is the obstacle with this method, since optical printing is two to three times more costly than contact printing. 3) By contact printing an intermediate negative and then printing the release from it—in other words, from 'B' original to 'A' negative to 'B' print. This—the third—method is the most practical and one that is used widely in both black-and-white and color 16mm film production.

Distinguishing A-wind From B

How do you tell A-wind from B wind? It's easy with single-perforated stock. As illustrated here, A-wind film will have the emulsion toward you when you examine it with the sprocket holes at the left. B-wind will be just the opposite—with the film base toward you. The same system also applies in identifying the wind of optical sound tracks. Where the film is double-perforated, identification is not so simple, and it is well to remember that B-wind film reads right through the base. In such cases, if there is no lettering in the scene or if you are unfamiliar with the flow of action, try the following:

1. When viewing the film, look for position of the buttons on people's clothing, remembering that men's clothing buttons from left to right, women's from right to left.

2. Look for obvious actions such as that of a person saluting the flag, using right arm.

3. Look for handkerchiefs in breast pockets of men's suit coats, and for wristwatches, usually worn on left hand, etc.

4. Look for the manufacturer's number's on the film. This is not always foolproof but it might help. Normally such numbers read right through the base if the film is B-wind.

The following is a summary of the wind problems one may expect to encounter in 16mm film production:

Film From the Supplier: Actually there is no problem here since most suppliers furnish single-perforated camera film as B-wind only. Printing stocks, however, are supplied in both winds. The wind of any film can be reversed, if necessary, to suit one's needs by winding it over from head to tail. Finally, remembering that the film you use in the camera is B-wind (standard emulsion position) will help you with all your wind problems.

Ordering From Laboratory: If you want to order a *master* so that you can use the same footage more than once, order B-wind. This will intercut with your original—also B-wind. For best quality, the *master* should be an optical master.

There are special considerations for sound tracks too. If you have shot negative and plan to print from the negative, order a B-wind negative track. If you have shot reversal and plan to print directly from the reversal, order a B wind positive track. If you have shot reversal and plan to go through a duplicate negative to positive prints, order A wind negative. If you have shot color reversal and plan to print directly from it in color, order B-wind negative for Eastman duplication. For duplication on Ansco color film, consult your laboratory since the kind of track will depend upon which duplicating stock it will use. And finally, if you have shot color reversal and plan to go through a color internegative to color positive prints, order A-wind negative.

Where stock footage purchased from libraries is to be intercut with your original, such footage should be ordered B wind. It is important to remember that if intercut stock footage does not match the wind of the original, it will be printed through the base and the results will be soft in focus.

If you will remember all this, you

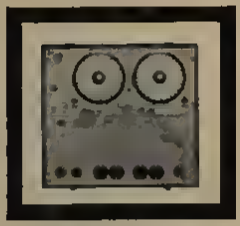
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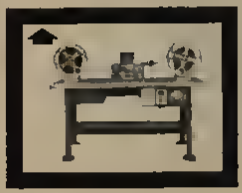


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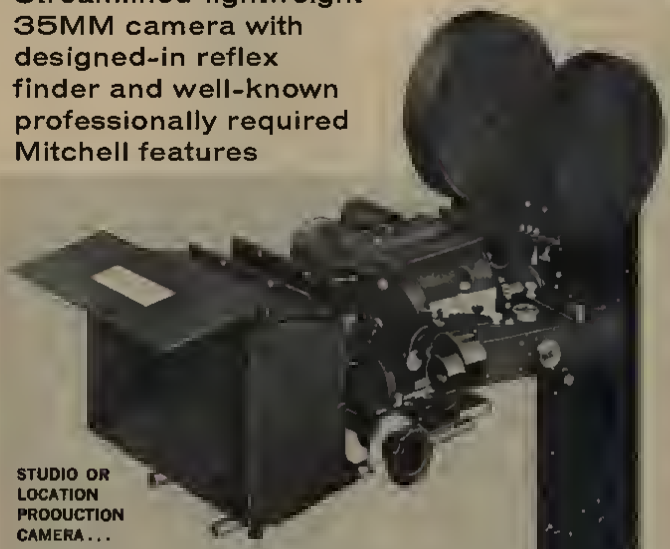
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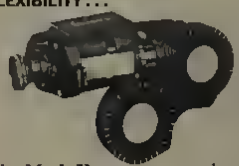
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won't go screaming back to your laboratory and demand: "Who put the holes on the wrong side of my film!"

Remember, that your camera film will be B-wind. In ordering, don't specify a duplicate. A duplicate will be A-wind with non-standard emulsion position. If you do not specify a B-wind print or authorize the lab to print through the base, the lab will normally make a regular contact print—which will have the sprocket holes on the wrong side of the film for proper projection.

The article above has been edited and condensed from material published in the Volume III, No. 2 issue of *The MPL Recorder*, publication of Motion Picture Laboratories, Inc., Memphis, Tenn.—Ed.

CHAPMAN BOOM

Continued from Page 675

single pair of wheels. The wide range of gear selections enables the crane operator to pull the Titan out of any critical spot that might be encountered on location.

The Ford motor adaptation, special gear box, chassis and axles were all designed and engineered by Chapman, aided by his engineer-son, Leonard, who is associated with him in the business.

The Boom

The improved boom of the Titan may be raised to elevate the camera platform to provide a maximum height of lens from floor of 27 feet. The boom may be rotated freely a full 360 degrees at any level, and when the 12-foot extension is added, the boom, at full horizontal level, extends 29 feet beyond the chassis. In this position it would be possible for the Titan to travel down the sidelines of a football field, with the camera shooting straight down the center of the field to record player action.

The boom arm brakes may be controlled at either end of the boom, as well as from the various control panels—of which there are five located at strategic positions on the Titan, including the driver's cab, camera platform, and base of the boom column. If, after boom is set, it is found to be out of balance, a light on each control panel so indicates and remains on until proper adjustment is made. Indicators also show if the "out of balance" con-

dition is at the front or rear, and safety locks act to prevent further manipulation of the boom until balance and therefore safety is restored. Other signal lights indicate when the boom, after a panning action, is locked in position.

Balancing of boom in elevated position is by means of conventional lead weights and mercury. Latter enables the camera operator to make minor balancing adjustments without the need to shift the lead weights. Should the director, or any other person leave the boom, following its initial balancing, the resulting imbalance can be readily cancelled out by means of the mercury equalizer. The center post, on which the boom is mounted, is essentially the same as on earlier models of the Chapman crane and hydraulically operated.

The Gearhead

The gearhead, which mounts on the camera platform at far end of the Titan crane, is more than a gearhead, it also incorporates a movable base with three seats for the cameramen and director and rotates with the camera as it is panned. The panning action is provided at two speeds, the tension is adjustable, and the full 360-degree panning movement features both hand and foot controls. A freehead is also available.

Other Models

Although there have been, over the years, Chapman cranes in a wide range of sizes and design, more recently there have been three standard models which preceded the Titan—the Hercules, a self-propelled, 6-wheel unit with a boom arm height of 25 feet; the Atlas, a self-propelled 4-wheel-drive location and stage camera crane with a maximum boom extension of 16 feet; and the Electra, a compact battery-powered camera crane for studio use having a 12-foot boom.

Chapman cranes had their beginning in the late 30's when, following the advent of sound film production, studios resumed the use of mobile camera mounts. While working at Paramount studios Ralph Chapman saw the need for a mobile camera crane from the cinematographer's viewpoint and designed and built one. Although imaginative cinematographers recognized its possibilities, the basic idea was about ten years early, and it lay more or less dormant until years later when another studio technician built a crane of his own design, but ran into construction difficulties before it was completed. The man enlisted the aid of Chapman and together they proceeded with the crane's construction. However, so divergent were the engineering ideas of each man, they soon parted and Chapman, his ideas fired anew, designed and built the first practical crane used on a Hollywood sound stage. The late Cecil B. DeMille quickly recognized its advantages and was the first to employ it in a feature production, and he ultimately became the industry's foremost exponent of boom shot techniques. Ralph Chapman has been building camera cranes ever since—each new model an improvement over the other.

"With the Titan," Chapman says, "the motion picture industry has been given the finest camera crane yet conceived by anyone, anywhere. My pride in the Titan is matched by the gratitude I feel toward the countless hundreds—from producers to grips—who, by accepting my equipment, have fired me on to work incessantly for improvements. The Titan is the latest but not the last of these improvements." ■

SMALL LIGHTS FOR BIG JOBS

Continued from Page 673

ing units, and there are more in the works.

For edification of readers who may be interested in small lighting units that can be operated off standard 110 V AC power lines or house wiring and can provide highly efficient photographic illumination suitable for big sets or small—compact, portable units ideally suited to illuminating location interiors or providing booster light—we present this month illustrations and brief descriptions of six of the several such lamps or lighting systems which have found ready acceptance in film production circles. More detailed information regarding the various units may be had by writing the manufacturers direct and requesting descriptive literature, prices, and possibly a local demonstration. Names and addresses follow:

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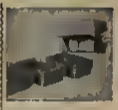
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WORKPRINT EDITING

Continued from Page 665

returned to the producer, he orders a workprint made of selected original scenes. This may be a black-and-white reversal print from B&W originals, or a B&W or color reversal workprint from color reversal original scenes. There are additional choices. also The producer may order his workprint with the original key edge-numbers printed through, or with ink-printed serial edge-numbers. Also, he may order a one-light (untimed) workprint, or a timed workprint. But regardless how the workprint footage is ordered, after the producer or his editor puts his workprint scenes in the desired order, cuts them to the desired length. then splices them together, the result is an "*edited* workprint."

At this point, let us review the three choices which the 16mm producer has when ordering workprints: First, the type of film; obviously, he must order a 16mm B&W print from B&W reversal originals — but what is his choice when the originals are color reversals? Should the workprint be B&W or color reversal? The chief advantage to ordering a B&W reversal workprint is in its lower cost—which is about half that for color reversal. And there are disadvantages, which are due mainly to the fact that a color-blind B&W reversal print of color originals will tend to conceal certain information important to the ultimate selection of scenes for the release print Many defects such as flare fail to show up prominently on B&W prints but are immediately apparent in a color print. Also, with B&W workprints it is almost impossible to avoid cutting together two color scenes of different color tone. Such color differences do not show up until the first trial color print is made by the laboratory The thing to remember is that a B&W print cannot provide a comprehensive record of tonal values of color originals So, unless the producer examines his 16mm original color reversal scenes by projection—and this is questionable if not deplorable practice — a color workprint is the logical choice where the budget will permit it.

Edge-numbers

Years ago before the advent of serial-numbering or edge-numbering of motion picture film, matching of negative and positive was accomplished by visually matching the action. This method was slow, tedious and often unreliable since it depended solely on the eyesight of the film editor. During the mid-twenties, a method of applying footage numbers on film with quick-drying ink in a manner similar to the operation of a printing press was developed. With the advent of sound films, edge-numbering played an important role, since it provided a positive and economical method of matching or synchronizing picture with sound track. Today, all raw stock manufactured in the U S. carries a key number on one edge which can be used for identification. However, during the period when the editor is cutting the workprint, such key numbers are no longer consecutive, and it is to the film editor's advantage to work with film that has been edge-numbered. with the numbers in consecutive order, permitting simple filing and quick identification of film cuts or sections.

A question often asked by film makers is: "Should I order the original key numbers to be printed through the workprint, or order serial edge-numbers to be printed on my film? Both methods are being used The printed-through key number involves less laboratory expense, as it can be printed simultaneously with the picture in a single operation. It is accurate—the original key number and its print-through image are bound to be at the

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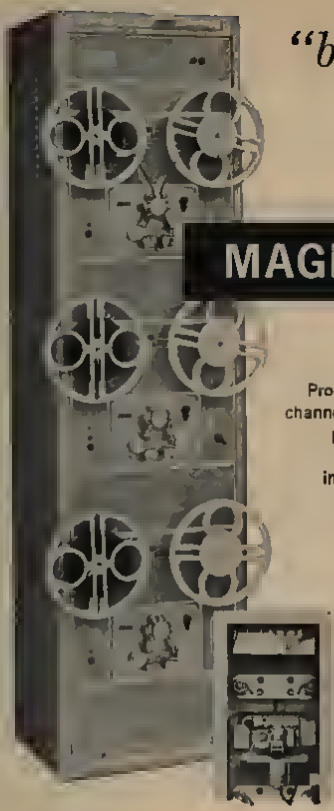
same identical position on both the original and print

So why consider the imprinted edge-numbers?

Well, for one thing, printed edge-numbers are *serial* numbers, which continue in series, roll by roll. The serial ink numbers which the laboratory can apply to one edge of the raw stock are serial within each roll, the four digit number will increase in value by one number, foot by foot. If, for example, the first number on a roll is 5000 it will become 5001 at the next 40 frame point in the print, then 5002, and so on This is also true of print-through numbers, but unless the rolls of film have been carefully selected for the purpose, the serial numbering system is useful only for each respective roll Also, the print through numbers can be read only by holding the film over a light

The advantage of machine-printed edge-numbering is that the numbers can be maintained in serial order for the convenience of the producer For example:

1 An alphabetical prefix may be combined with the numbers for one production (See example illus-



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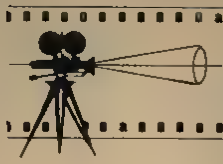


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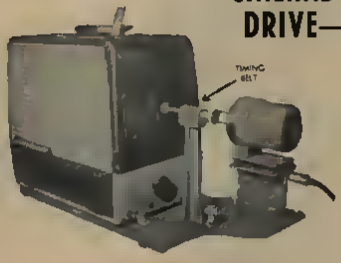
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trated.) If the production print order involves ten rolls of 400-foot stock, the first roll might be numbered AA0000 to AA0400, the next roll AA0401 to AA0800, and so on.

2. If the original film for one production comes in for workprinting by batches or a roll at a time, instead of all at once, the laboratory usually keeps a written record of the film as it is received and maintains the same progressive serial numbering, roll by roll, until the job is completed.

3. Where the producer has more than one film production going through the laboratory at the same time, he may request different alphabetical prefixes for the edge-numbering of footage for each production. General Film Laboratories, for one, makes available edge-numher prefixes AA through LL, or any combination of the double letters.

4. Where it is desirable to edge-numher the 16mm print to correspond with numbers on the 35mm footage from which it was reduction-printed, the ink numbers can be applied on the film at every 16th frame, instead of every 40th.

5. Where 16mm film already edge-numbered for one production is to be spliced in with other footage for a new production, a new alphabetical prefix may be used in the edge numbering to keep the new numbers separate and distinct from the old.

Timed or One-light Prints

Proponents of the one-light or untimed workprint argue that the timing of a workprint scene may not be the same as the eventual timing of the release print scene, and therefore it can be more confusing than helpful; that the edited workprint is only a rough approximation of what the release print will be like, and, minus opticals and sound track, timing is of no real help, and that the producer can do better viewing a one-light print of his originals which will reveal exactly how the original scene appears, thus enabling him to judge how the various cuts will best fit together, exposure-wise.

Producers who prefer timed workprints usually care less about how the original looks than how prints from it can be made to look through laboratory skills. So he prefers his scenes



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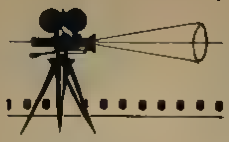
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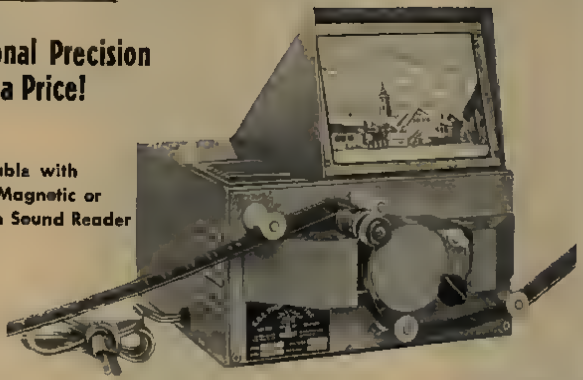
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timed, arguing that the better his edited workprint looks to his client or other production critic, the better his chances for an early approval of the film. But the producer is the boss and whatever he wants, timed or one-light workprints, film laboratories will supply them—although labs lean strongly toward the timed print.

Cutting and Editing

With the workprint completed and approved, the next step, of course, is cutting and splicing the footage preparatory to production of release prints. Now it becomes important to provide for any necessary optical effects, which calls for A&B roll editing. While a fade merely covers up a certain number of film frames and does not affect the length of the workprint scene, a dissolve is different. In the printing step, a dissolve consists of two overlapped fades—one fading in on the incoming scene as the outgoing scene is faded out. For a specified number of frames both scenes are printed superimposed.

In the workprint, the splice joining the two scenes to be lap dissolved indicates the center of the dissolve, and the original scene must retain the additional footage to be overlapped in the A&B roll printing procedure. (See chart on page 665.)

Rather than puzzle this out, keep in mind the single editing rule: "Half the length of the dissolve must be cut off the end of the *outgoing* workprint scene, and the same amount off the beginning of the *incoming* workprint scene. *However, do not cut this footage from the original!* Excising the film lengths in the workprint, as explained above, is A&B roll cutting procedure that insures that the original scenes will have the additional length required for the conventional A&B overlap.

The scene-end footage can be cut off the workprint during this final phase of the editing procedure, as the various scenes to be dissolved are cut. It sometimes happens that these "dissolve" cutoffs are unintentionally overlooked in the cutting, due to preoccupation with the film's subject matter. For this reason, some 16mm producers go through the entire length of a workprint footage, before the scene-editing step, and arbitrarily cut off one-foot from the beginning and the end of every individual scene. In this way, they know they have provided for overlap in

all cases, and can forget the possibility of error.

As for cutting the individual scenes, General Film Laboratory's Technical Staff offers clients some useful—but not necessarily hard-and-fast—rules of thumb:

1. For a series of scenes in a montage, cut each scene about 3 feet in length about 5 seconds running time on the screen
2. Cut no scene shorter than one-foot
3. Start and end scenes on complete action. For example—if the scene shows a batter hitting a ball, dissolve out as he connects with it, not in the middle of the swing.
4. To speed up the pace or mood of the film, cut scenes shorter. Cut them longer to slow pace.
5. In straight-cutting an action, use part of the action in each of the frames to be cut together to provide a smooth flow of action in the cut. (About half of the action movement in each of the two adjoining frames)
6. In joining scenes in a montage, vary the angle and the area (closeup, medium shot, etc.) if the variety is available.

Originally published in Vol. 1, No. 6 and 7 of the General Film *Rewind* and edited, condensed and reprinted here by permission. —Ed

ROLE OF CINEMATOGRAPHY

Continued from Page 669

land, and beyond Ascension there are similar operations in Africa and aboard ships sailing the Indian Ocean 9,000 miles away. It depends entirely upon the flight of the missile involved as to how far a particular photographic operation extends. Some, which deal with short-range missiles, cover only a few hundred miles. Others stretch the full length of the range.

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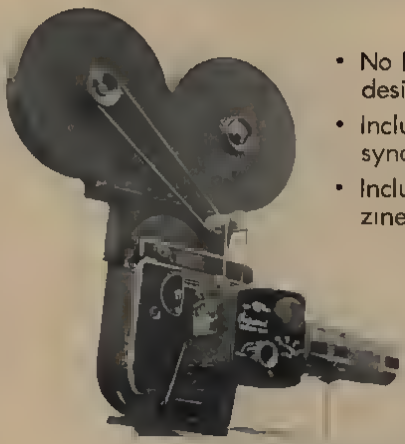
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cause it is essential for engineering purposes to be able to relate and accurately compare down to fractions of a second the action photographed by the various far-flung cameras

The basis of the synchronization method developed to meet this need is a sound-pulse signal originating at the United States Naval Observatory and distributed directly to the cameras from the Operations Center at Cape Canaveral by means of cable It is also transmitted by radio to down-range installations and to ships at sea many thousands of miles away The sync signal makes possible direct and accurate comparison of action photographed by any or all cameras, down to 1/1000 of a second Relating all of the cameras precisely to a single common time standard by this means is extremely important, especially in cases where there is a deviation in the calculated flight of a missile An accurate method of time reference can pinpoint exactly at what instant the trouble began.

The mechanism used to record the sync-pulse marks on the film is mounted between the camera and the magazine It works in a manner similar to a

standard optical sound recording unit. flashing an intermittent light signal through a slit to record a visible pulse on the edge of the film, outside the sprocket holes This unit was developed locally and is used exclusively on the Atlantic Missile Range It does a highly satisfactory job. although much more sophisticated timing devices are now in the process of development

The most extensive photographic coverage of a single shot has involved more than sixty RCA-operated motion picture cameras at the Cape. Some, like the man in-space flights, also involve several hundred news cameramen coming in from the outside RCA coverage of a routine launch may involve the simultaneous operation of forty to sixty cameras.

Every launch is documented in motion pictures for record purposes The activities photographed include arrival of the missile itself, all of the various assemblies and checkouts, erection on the pad, and other tests that are made before the actual launch Part of this may be photographed in the hangar and in special test areas, as well as on the pad. Most of the missiles currently being launched have several components — including first, second and possibly third stages, as well as the nose-cone, which may have several different parts to it. Each section of the missile is separately documented up through the final assembly.

The launch itself is only a short phase of the operation, considered in terms of the amount of film shot and the number of man-hours that go into the total photographic coverage Documentation starts the minute the missile or one of its components arrives at the range This is sometimes months in advance of the launch and every step leading up to that critical moment is covered photographically If a new project is being photographed for the first time it will be accorded more attention and footage than one that is routine. Recently the giant new Saturn missile was brought by barge from Huntsville down the Mississippi river. across the Gulf of Mexico and up to Cape Canaveral Other photographic services covered the departure of the missile from Huntsville, but RCA cameras picked it up in southern Florida and covered its transportation up the inland waterway to the Cape and off the barge onto the launch site.

RCA filming embraces two major categories: documentation and engineering. Documentary footage is cut into reports for the Air Force and for the National Aeronautics and Space Administration, as well as for reports for the various companies which co operate in building components. assembling and launching the missiles The engineering phase generally begins with pictures of the latest developments in a missile and the initial assembly of its various components As quite often happens. there will be problems in fitting together for the first time elements that have been brought from all over the United States Sometimes some of the missile components are damaged in transit. and cameras document this to show the actual circumstances involved. Engineering photography continues up through launch day. at which time it records how the missile takes off, how it programs, if it is flying true to form, whether the flame is exactly the way it should be, etc Often a missile in flight will look fine to the eye, but a subsequent study of photographs will reveal a flaw. Or in case where there has been a failure, it is often possible to detect what actually happened by an intensive reviewing of the film Photography and telemetry work closely together to provide a complete and accurate account of what actually happens during every missile flight.

The bulge of land that is Cape Canaveral extends out into the ocean for several miles, and for some obscure climatic reason, while temperatures are not excessive, the humidity is extremely high so that rust, corrosion. dampness and other attributes of high humidity constitute a continuing problem that often reaches a critical point

For example, sometimes cameras will be set up in the middle of the night when it is cool, in preparation for a morning launch Moisture condensing in the camera overnight turns to water vapor after several hours in the sun causing the film (especially a color emulsion) to become so tacky that it will not run through the camera.

So far, no really satisfactory solution to the problem has been found. Some of the large permanent installations on the range have been air-conditioned and it is expected that more will be—but there seems to be no feasible way to effectively air-condition small documentary cameras in the field. Placing an envelope of porous dehydrating material such as silica gel within the housing of the



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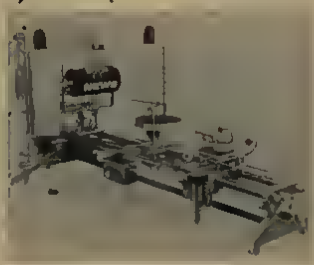
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camera helps some—as does the practice of covering the camera with a waterproof shroud, inside of which a high wattage bulb is left burning to evaporate the moisture.

Despite all efforts, however, salt water vapor still condenses on lenses and corrodes metal parts so severely that cameras must be given a major overhaul after every launch or field operation. Several chemicals have been tried in attempts to retard this effect on metal camera parts, but no really effective agent has yet been discovered.

Originally the range was set up for 16mm photography, simply because of the easy availability of 16mm equipment and the fact that the final product was to be released in 16mm. Some years ago, RCA revised its methods in the interest of obtaining better picture quality. One of the first steps was to bring in professional photographers. Another was to switch to 35mm film and equipment. Today, most of the filming is done in color because the required visual differentiation of subject matter is not possible with black-and-white. Eastman Color Negative is the standard and has been used extensively for the past four years.

In the meantime, new 16mm film stocks such as the Ektachrome emulsions have been developed having greatly improved resolution, speed and grain characteristics. The resultant high quality has made it possible for RCA to start converting back to 16mm production almost exclusively. Such a move, by eliminating the costly 35mm to 16mm reduction printing process,

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will result in a tremendous saving of time and money. There will, however, always be a certain amount of 35mm production required for special purposes, and projects which have been initiated in 35mm will be carried through to completion without change.

RCA's film processing laboratory is located at Patrick Air Force Base 22 miles south of Cape Canaveral. Since all of the checkouts, tests and launches of missiles are made at the Cape there is a certain unavoidable inconvenience in having the main laboratory located so far from the center of operations. There is at the Cape a small but very efficient still laboratory for developing on a rush basis still photographs for immediate use by contractors on the spot. but all motion picture processing is done at Patrick.

RCA does only a nominal amount of film editing. but processes practically all of its film from 16mm to 9-inch still pictures in its own modern still and motion picture laboratories, which are staffed by expert technicians

Ordinarily work prints and masters are made from 16mm footage, but since there may be 30 or 40 outlets for each piece of film, each of which may be handled in a different way, the lab must be equipped and ready

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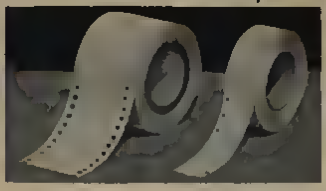
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to meet these varying demands. Each company or agency receiving masters of the footage has its own special use for it. A contractor, for example, may only require footage pertaining to his own phase of the operation. In other cases, where viewing is the sole requirement, only a work print is required.

During actual missile launches, down-range assignments are rotated among the cameramen and everyone who is physically capable of going down range takes a turn at it. Crews receive premium pay for such assignments and the schedule is equitably worked out. On board ship, cameramen are assigned to a particular job which may last for two weeks or longer, depending upon the project requirements. When the assignment is completed they return to Cape Canaveral and another crew is sent on the next job. Some of the outlying posts, like Ascension Island, are staffed for several months at a time, simply to avoid the time consuming transportation back and forth. Crews are also assigned to aerial photography down-range on capsule or nose-cone recovery missions flown by the Air Force.

RCA has provided NASA with around-the-clock photographic coverage, both still and motion pictures, of Astronauts Glenn, Carpenter and Schirra training at the Cape prior to their orbital leaps into space. This coverage included photographing each spaceman getting up in the morning and eating breakfast, which is quite a project considering all the various probes and electronic devices which are attached to their bodies. After breakfast the Astronaut gets into an air-conditioned van and rides to the launch pad, goes up in an elevator and climbs into the capsule. All of this is extensively covered by means of preset lights and cameras attended by cameramen who start and stop the various units as needed. Following a man-launch, aerial cameramen at the recovery site record the pickup. The Navy takes over photography of the Astronaut aboard the recovery ships and while he is being brought back to a base in the Carribean—but once there, RCA camera crews again take over and record the briefing on sound film, then follow through back at the Cape covering his press conference. This phase, of course, is open to the outside press and many newsreel cameramen are also present.

RCA camera crews have utilized almost every type of camera made. Cine-Kodak Specials are still widely used for 16mm field work, as are Bell & Howell Filmos, but the 16mm Mitchell has been standardized as the basic camera for filming assembly, erection, launch and tracking of missiles. The 35mm and 70mm cameras used for engineering photography, are also mainly Mitchells. For high-speed work Milliken and Fastax cameras are used. RCA's own photographic engineering department has developed custom equipment having special housings and quartz lenses so designed to work in close enough to shoot right up into the flame of a missile.

Tracking a missile and holding it constantly in the center of the finder frame was, in the beginning, next to impossible, but in recent years the M-51 gun mounts used with the cameras have been modified and improved so that, in the hands of skilled operators, such accuracy is now routine. So skilled are some of the operators, in fact, that they can track a missile into clouds and pick it up coming out again, still centered in the frame. Most tracking is done manually, although there are some cases in which the mount is guided by radar. Usually one man handles the entire operation although occasionally two men work as a tracking team, with one controlling azimuth while the other concentrates on elevation. As many as five cameras may be mounted on one tracking mount at the same time. A battery of super telephoto lenses may include a 80mm, a 120mm and a 160mm on the same mount, with the composition framed for the longest lens and the other cameras tied in accordingly. This arrangement permits closeup and cutaway capabilities as well as wide-angle coverage in case of a blow-up or other erratic development in the flight of the missile.

Lighting for photography at Cape Canaveral presents special problems, especially since the missiles continue to get larger all the time, and much of the more important work is being done at night. In filming the multitude of night operations that take place, as many as thirty six Air Force searchlights of 800,000 candlepower each have been trained on a missile at one time, and experiments are now being made with a new type searchlight that will produce illumination of 1½ billion candlepower. To solve the lighting

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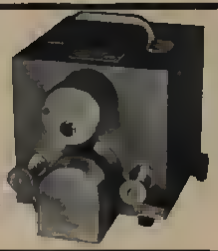


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problem here, RCA is now testing an entirely different approach to lighting in which missiles will be adequately illuminated by special lighting units placed close to the pad and so constructed as to withstand the impact of the launch explosion. The units are made by Sylvania Lighting Products and are similar to the famous Sun Gun but with a PAR-64 type sealed-beam envelope surrounding a quartz iodide filament. It is hoped these units can be so placed as to provide up to 250 foot-candles of light on the missile, making possible high-speed color photography at night.

Although RCA sound engineers have for years been recording the sounds of missiles as wild-track to back up picture, the application of synchronized sound in RCA photography is limited because very little dialogue footage is shot. When dialogue scenes are filmed they usually depict an engineer discussing a particular problem or new technique and are filmed single-system with an Auricon camera equipped with a 400- or 1200-foot magazine.

Recently a new type of quick film production known as the Launch Report has come into favor. It is filmed single-system as an on-the-spot description of what is happening up to and including a launch. Though necessarily catch as-catch-can in coverage, it can be developed immediately, rough cut and speeded on its way to a distant monitoring agency. In this way, engineers and company officials on the West Coast can hold a morning briefing of a launch made the night before at Canaveral, without the necessity of having to actually send personnel to observe it. This has proved in many ways to be far superior to a long written report in actually detailing what happens, although it does not necessarily replace the written report.

Despite the excellence of the footage currently being turned out by RCA cameramen, lab technicians and photographic engineers at Cape Canaveral are constantly experimenting and searching for better ways to photograph their exciting subject matter. Because of the increased importance which our Space Program has recently assumed, theirs may well be the most important single photographic project in the nation today. ■

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EYES OF U.S. AIR FORCE

Continued from Page 677

tankers, or offensive and defensive air actions.

APCS also has back-up cameramen located with six photographic units based within the continental U.S. who are responsible for photo support to the Atomic Energy Commission and Defense Atomic Support Agency. APCS photo task forces are now covering Air Force activities in Vietnam and Thailand in support of counter insurgency operations. They are capable of working in the air or on the ground, and some are even qualified to jump into the forward areas with the air controllers.

APCS cameramen also document the humanitarian activities of the Air Force. They have recorded the emergencies in Lebanon, Taiwan and the Congo; Air Force disaster relief during the Agadir and Chilean earthquakes; assistance given to flood victims in Pakistan and Spain as well as the food drops made in Tanganyika last June. During the recent Iran earthquake Air Force camera crews were on hand to record the dropping of U.S. medical supplies and the setting up of Army emergency hospitals in almost inaccessible areas within 26 hours after disaster struck. They perform their missions in all climates as, for example, when they documented the "Deep Freeze II" operation at the South Pole in temperatures ranging from ninety degrees above to sixty degrees below zero.

Another important phase of the APCS documentary mission is aiding our scientists and engineers in research and development by providing optical instrumentation photography so that certain effects and experiments can be reviewed as many times as necessary for measure and analysis. The APCS photographic unit which documents research-and-technical instrumentation is located on the West Coast at Vandenberg Air Force Base, where it is an integral part of the ballistic missile research team.

The second mission area, production filming, is accomplished both in-service and by commercial contract. In-service production is handled by two APCS detachments: the 1365th Photographic Squadron located at Orlando Air Force Base, and the 1352nd Photographic Group at Lookout Mountain Air Force Station in Hollywood. These production units have approximately the same capability as any major studio—including directors, writers, production cameramen, animation experts, artists and film editors—as well as complete sound departments and processing laboratories. Of the 1,040 reels of production subject matter which United States Air Force headquarters expects APCS to produce within the coming year, these organizations will account for 580 in service reels.

Additionally, as of last July, a new production capability was initiated at the 1350th Motion Picture Squadron, Wright-Patterson Air Force Base, devoted to serving the Systems Command in producing engineering type report films involving a minimum of in-service manpower and the maximum use of commercial capabilities engaged through production services contracts. Such contracts cover hundreds of items and make possible the procurement from private industry on a fixed-fee basis of any special equipment, stage facilities or technical personnel not available in-house. They are utilized as adjuncts to the in-house capability in order to make possible the production of more pictures than could be completed with the resources at hand committed to other films of equal or higher priority.

Detachment No. 1 of Headquarters APCS at Wright-Patterson functions to provide complete motion picture productions by commercial contract. The current program calls for 460 reels to be produced by small independent motion picture companies, with APCS control over the presentation, the subject content and the cost of each production.

Continued on Page 698

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EYES OF U.S. AIR FORCE

Continued from Page 696

Some of the films are especially designed to be produced in-service for one or more of three excellent reasons: when an extremely short deadline is imposed, when the subject matter is very highly classified, or when the hazards of actual filming make production too dangerous for any but combat trained camera crews

Films produced for the Air Force are classed in three major categories: Special Film Projects, Training Films, and Film Reports These range from practical subjects dealing with safety and maintenance to films which are abstract studies of space travel The films are produced with creative imagination and the highest degree of professional finish Their quality is attested by the fact that hardly a year goes by without one or more of them being accorded national or international recognition To cite a few examples A film on the crack Air Force Thunderbirds precision flying team touring the Far East, titled, "Breaking the Language Barrier," was recently nominated for an Academy Award. "Survey of Astronautics" has been translated into twenty-two languages and was given special mention in the Venice Film Festival At the recent convention of the Industrial Film Producers Association, five Air Force films received awards

The Air Force News Review, produced monthly, provides the quickest and most vivid way of informing airmen all over the world what is happening in various far-flung units of the Air Force. The Air Force System Command's Staff Report, another monthly production, is a classified report on the latest developments in the Air Force Research Program It goes to 390 U.S government agencies—including Air Force, Army and Navy—as well as to Air Attaches in American embassies overseas, and prime contractors within the Zone of Interior. It is viewed by some 32,000 key people each month.

The APCS motion picture production effort turns out more reels per year than most Hollywood studios. The various films serve for the quick and sure training of airmen, as well as to keep the President, Congress and the Department of Defense informed on the scope of Air Force activities Worldwide deployment of the Air Force requires that its training and educational films be conveniently available for showing wherever they are needed, which accounts for the third mission area of the Photographic Service—distribution. At St Louis the 1356th Film Library Squadron operates the Air Force Film Library Center This library system each year services about 360,000 requests for more than four thousand subjects, and prints are kept in constant circulation to users around the world They are used not only for Air Corps training, orientation, indoctrination and command briefing—but also for showing to clubs, civic or church groups, or foreign military personnel cooperating with the United States under the military assistance program. To assist and expedite this distribution of films, APCS has established library detachments in Japan, Alaska, France and England

The Air Force Motion Picture Depository is operated by the 1350th Motion Picture Squadron at Wright-Patterson Air Force Base and is charged with the responsibility of storing historical and other valuable film footage Over 90 million feet of irreplaceable motion picture film is stored in its ninety-nine air conditioned vaults. These film holdings include footage that dates back to the first flight of the Wright Brothers. Going from vault to vault, one can trace the evolution of the aerospace age from the earliest beginnings of aviation to the launching of our modern orbital space vehicles.

All film received at the Depository is reviewed and catalogued by archivists. Some, because of its historical value, is preserved indefinitely Other footage is held only for a specific length of time—two, five or ten years—depending upon how current it may be. The film in the Depository is never in dead storage, however It is used over and over again. For example, a few years ago, the Columbia Broadcasting System sent a staff to the Film Depository, where they studied and sorted important historical films for an entire year, then wrote and edited the television program, "Air Power." Such footage is also constantly used by production units of APCS, both in-service and commercial. When a certain scene is required for a particular motion picture currently in production it can often be found in the Depository, resulting in a tremendous saving to the

Air Force in 1951 and June

Since there is no longer an official Air Force school for training cinematographers, APCS Headquarters has established its own training facility at Orlando Air Force Base. It consists of a twelve-week course taught by non-coms drawn directly from the production crews, who are not only expert cameramen but who also have outstanding ability as instructors.

In the final weeks of the course the fledgling cameramen shoot all day. Their film is processed overnight on the base, and they edit their own footage in the morning. If the scenes will not cut together smoothly, the student knows he has made a mistake, and he finds it himself with the instructor looking over his shoulder. Requiring each student to do his own editorial work along with the actual exposing of the film has proven to be a very quick and efficient method of training apprentice cameramen. Their achievements when they complete the course and are sent out to join actual crews as second cameramen, are proof that such a system of instruction is effective.

In order to secure highly trained officer-technicians, APCS looks to institutions of higher learning, such as the University of Southern California, which offer full curricula in Cinematography. Young men who take ROTC training in conjunction with a Cinema major are eligible upon graduation, for assignment as officers in Air Force photographic units. Others who have received degrees in Cinema but who have not yet fulfilled their military obligations (and wish to do so) may be sent to a 90-day Air Force Officers Training School, upon completion of which they are commissioned as photographic officers. Should they choose to remain in the Air Force beyond the basic commitment, they may be sent to universities to study for Master's degrees or Doctorates in Cinema. Such a program offers a rare opportunity to men who might not otherwise be able to pursue advanced degrees, and—at the same time — it assures the Air Force of a continuing supply of officers thoroughly trained in advanced techniques of cinematography.

Observing APCS motion picture personnel, both military and civilian, in action—one is forcibly impressed by the verve and spirit with which they tackle their challenging assignments. They are not merely enthusiastic about their work—they are downright excited about it. Obviously this tremendous morale is initially generated in the top echelons of command and permeates down through the ranks. For example, Brig. Gen. Robert W. Hall, recently appointed Commander of APCS following the retirement of Maj. Gen. Clifford H. Rees, is a man of electric vitality and enthusiasm, a down-to-earth practical executive who cuts through red tape to keep his command functioning at its optimum peak. No chair-borne figurehead, General Hall fought in World War II in the China-Burma theater and, prior to assuming APCS command, was attached to United States European Command Headquarters in Paris.

"It is an exciting and important job our cameramen and photographers are doing," observes General Hall. "One of my primary objectives is to keep constantly informed as to their tech

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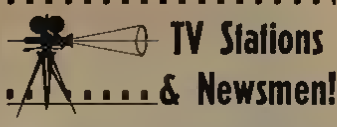
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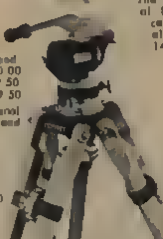
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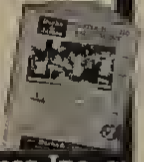
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meal and administrative problems — that I may, in every possible way, facilitate their operations. They are an exceptionally loyal and efficient group of technicians and artists and their ideas are extremely valuable to our mission. I've got an 'open door policy' so that they can come in and discuss their thinking with me at almost any time. And, if a problem arises in the course of their work, I expect to know about it quickly so that I can help."

Similarly enthusiastic and imbued with a pride of organization that fairly glows is Col. James P. Warndorf, Deputy Chief of Staff—Photography, Hq. APCS, Orlando Air Force Base. Col. Warndorf, a pioneer in Air Force motion picture activities has, in the past, commanded each of the major APCS detachments at Lookout Mountain, Wright-Patterson and Orlando. He literally "lives" each mission with his camera crews, even though his critical administrative job keeps him confined behind a busy desk most of the time these days. He is directly and intimately concerned with activities of APCS cameramen in the field and exults in their accomplishments with a deserved ly personal pride.

"Our men are in love with their work—dedicated to it," Col. Warndorf comments. "I feel that we've got the very best group of know-how across the board—ranging from photographic engineers who design special equipment for our crews, to specialists in audio visual education and the cameramen out in the field. There is a good deal of danger associated with our work, but I've never once heard a cameraman say that an assignment was too hazardous or that he was not being paid enough to take such risks. This is true of our civilian as well as military personnel. The 'bluesuiters' go into a dangerous situation and the civilians are either ahead of them or right alongside them. I am constantly amazed and pleased at the ingenuity they use in solving problems that come up in the field. You get close to people working with film, and I feel that this is an especially fine group to be associated with. I'm very proud of them." ●

NOTE: In a follow-up article, the author will present an eye witness account of APCS cameramen in action filming and televising the spectacular Air Force Tactical Weapons Meet, 'Operation William Tell, 1962," recently held near Nellis Air Force Base in Nevada.—ED

BEHIND THE CAMERAS

Continued from Page 658

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ROBERT STATTEES, ASC, 'PT 109' (P.Vision, color, shooting in Florida) with Cliff Robertson and Ty Hardin. Lewis Milestone, director.

MARK DAVIS, ASC, 'PT 109' Second Unit.

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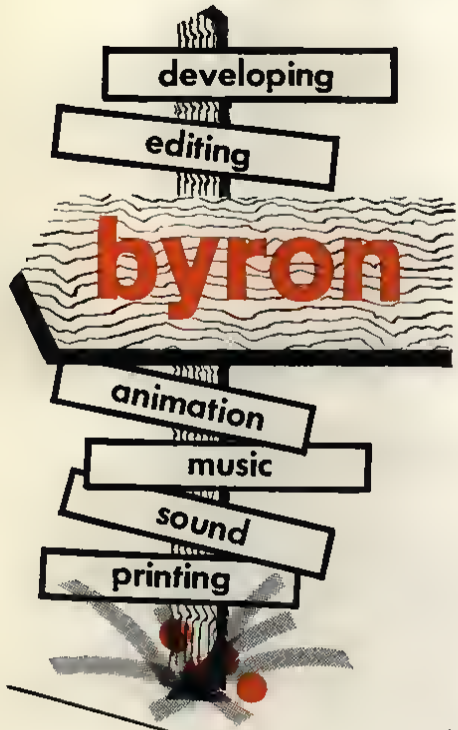
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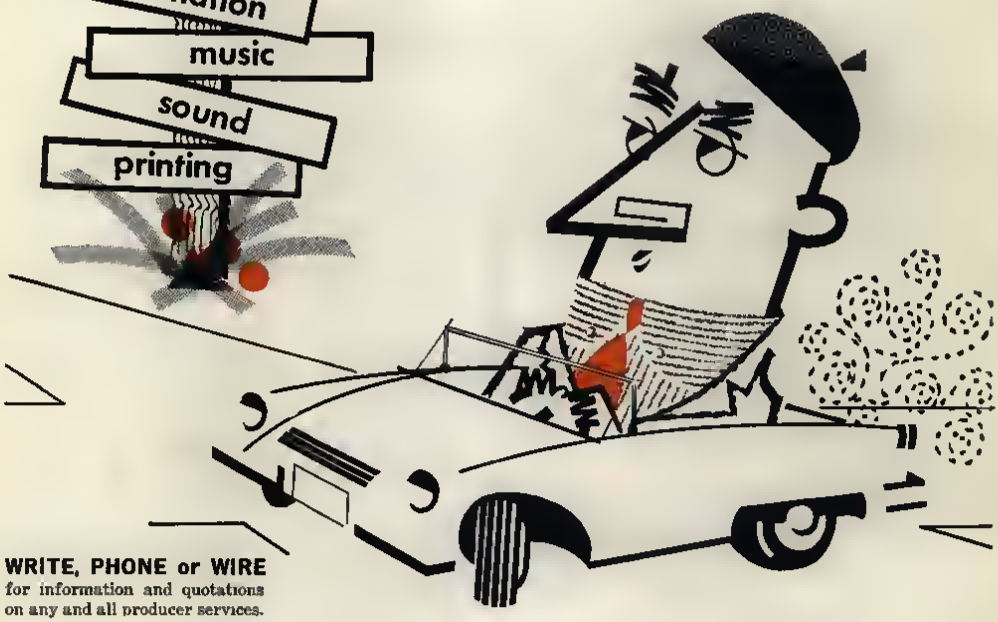
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